



# *Southeast Center for Agricultural Health and Injury Prevention*

CDC/NIOSH Cooperative Agreement 5U54OH007547-13

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## *Annual Report*

09/30/12 through 12/31/2013

### *Submitted by*

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*Located in Lexington, Kentucky, the Southeast Center for Agricultural Health and Injury Prevention serves employers, workers, and families in KY, TN, GA, MS, AL, WV, VA, NC, SC, and FL.*

## SECTION I — CENTER SUMMARY

The mission of the Southeast Center for Agricultural Health and Injury Prevention is to develop and sustain an innovative program of research, education, and health promotion to prevent work-related illness and injury and to improve the health and safety of agricultural workers and their families in the southeastern United States. Toward this end, the Southeast Center conducts and supports applied research throughout its 10-state service region: Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, and West Virginia.

### **Specifically, the Center aims to**

1. Conduct research on the prevention of occupational disease and injury among agricultural workers and their families;
2. Develop, implement, and evaluate education and outreach programs to promote the safety and health of agricultural workers and their families;
3. Develop, implement, and evaluate model programs to prevent illness and injury among agricultural workers and their families; and
4. Develop linkages with other governmental and non-governmental bodies involved in public health and safety, especially other agricultural safety and health research centers.

Under CDC/NIOSH Cooperative Agreement 2 U54OH007547-11, the Southeast Center received initial awards effective 09/30/11 for the first eight projects and programs listed below, followed by later funding for another project, Native American Safety and Health (funded as of 09/30/12). The Southeast Center received funding from 09/30/12 – 09/30/13 under CDC/NIOSH Cooperative Agreement 5U54OH007547-13.

### Research

1. Latino Farmworkers, Work Organization, Safety and Health

### Prevention/Intervention

2. Economics of Preventing Agricultural Injuries to Adolescents and Adult Farmers

### Education/Translation

3. Nurses Utilizing Research, Service, Education and Practice (NURSE-AP)
4. Graduate Certificate in Agricultural Safety and Health
5. Administration and Planning
6. Feasibility Studies and Emerging Issues Program
7. Outreach
8. Evaluation
9. Native American Agricultural Safety and Health

## RELEVANCE

US Department of Labor trend data for the southeast United States, 2006–2010, indicate that the number of reported fatal industries in all industries at times rose in each state, despite overall downward trends, and the burden of fatal occupational injuries remained disproportionately heavy among those employed in the extractive industries of agriculture, forestry, and commercial fishing/aquaculture (AFF). Nationally, in 2012, agriculture, forestry, fishing and hunting

recorded the highest fatal injury rate of any industry sector at 21.2 fatal injuries per 100,000 FTE workers. This toll is *nearly 7 times higher* than the all-industries rate of 3.2 per 100,000 FTE workers (BLS-CFOI 2012). Fatal work injuries increased among workers under 16 years of age, rising from 10 in 2011 to 19 in 2012, and reaching its highest level since 2005. Fourteen of these fatally injured young people were employed as agricultural workers – a sobering fact that underscores the importance of the Southeast Center’s Economics of Prevention project (Mazur et al.), which is aimed at rural adolescents and the educators who serve them.

The agriculture, forestry, fishing and hunting sector also continues to record much higher rates of non-fatal occupational injuries than the all-industry average: Whereas the rate of non-fatal occupational injury and illness cases requiring days away from work to recuperate was 112 cases per 10,000 full-time U.S. workers in 2012 (all industries average), the rate was 192 per 10,000 full-time workers in agriculture, forestry, fishing, and hunting. (BLS-IIF, 2013).

Thus, while much progress has been made in improving the safety of regional workers, much remains to be done to solidify this progress and ensure sustainable, long-term reductions in risk-hazard exposures. In this its fifth and current 2011–2016 funding cycle, the Southeast Center is focused on

- Prioritizing injury and disease surveillance to keep pace with sector trends, including changing workforce demographics -- especially immigration and aging.
- Properly identifying populations at risk, such as minority farm workers and adolescents.
- Disseminating knowledge regarding the frequency, severity, direct and indirect costs of fatal and non-fatal farming-related injuries -- and the *cost-effectiveness* of prevention.
- Increasing the uptake and utilization of innovative instructional methods and digital gaming technologies that demonstrate the value of prevention through design (PtD).
- Increasing the number of public health graduates, high school teachers, nurses and other practitioners educated and trained through Center programs in agricultural occupational safety and health and related research.
- Enhancing capacity and infrastructure for agricultural occupational safety and health education and research at the University of Kentucky and multiple collaborating institutions.

These priorities reflect our commitment to strategic goals enumerated by Gunderson & Bean, et al. (2012) following their systematic evaluation of the AgFF national research program: Gunderson P, Bean TL, Correa MT, Dosman JA, Groves WA, Lee L, et al. Comments on the Agriculture, Forestry, and Fishing (AgFF) National Research Program Sponsored by the National Institute for Occupational Safety and Health (NIOSH), Centers for Disease Control and Prevention (CDC). 2012 Jun 26. Accessed 2014 Jan 30 at <http://www.cdc.gov/niosh/programs/agff/pdfs/120703OASHReviewReport.pdf>

## Key Personnel – Southeast Center for Agricultural Health and Injury Prevention

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## Outcomes

Key intermediate outcomes enumerated on the NIOSH logic model for AFF program evaluation and documented by the Southeast Center during the period under review include

- Citations / reprinting / use of published work (evidence of uptake)
- Improved knowledge of the causes and conditions of workplace injury and illness
- Uptake and utilization of farm safety curricula and instructional tools by regional academic institutions
- OSH workforce development
- Installation of newer safer equipment (e.g., cost-effective ROPS)

**Prevention through Design / Risk Hazard Reduction.** For example, during the period under review, agricultural mechanics programs in three rural county high schools utilized EOP II curriculum materials and methods (Mazur et al.) and provided for the installation of 7 cost-effective ROPS (CROPS) on ungarded farm tractors (Whitley, North Laurel and McCreary Counties). These high schools incorporated farm safety and economics education into their 2013 curricula and conducted the CROPS installations using NIOSH-prepared instructions ([NIOSH DSR-PTB](#)). Public high schools in five additional rural counties are joining the project in 2014: Anderson, Boyle, LaRue, Nelson and Mercer Counties. An additional 10 CROPS installations are anticipated. Educators and students participating in the project have demonstrated the uptake of new knowledge regarding the frequency, severity and direct and indirect costs of agricultural injuries, as well as the cost-effectiveness of prevention through design (PtD).

**Uptake and Institutionalization of farm safety curricula.** Through the Economics of Prevention (EOP) and now, CROPS, projects, more than 400 current and future educators in Kentucky, Georgia, Mississippi, Arkansas and North Carolina have been trained in the use of interactive farm safety narrative simulation exercises and injury cost analysis tools featuring embedded performance measures. When administered to representative samples of subjects,

these innovative tools provide immediate feedback that is useful for student correction and tailored instruction. At the same time, they obtain self-reported yet invaluable proxy surveillance data regarding worker demographics, hazard exposures, close calls, and injury events (Mazur et al., 2013). Through both the CROPS and EOP II projects, Drs. Joan Mazur and Stacey Vincent, et al., have demonstrated EOP materials' utility in meeting state Core Curriculum standards.

**Improving knowledge of the causes and conditions of workplace injury and illness.** The EOP projects (EOP I and II) represent a critical advancement in public health methodology because the absence of reported injuries and illnesses does not necessarily equal the absence of, or reduction, in risk/hazard exposures: Obtaining surveillance data on “close calls” and “near misses” is crucial to understanding opportunities for both improved control technologies and targeted behavioral interventions. Accordingly, the Southeast Center is likewise pleased to report the ongoing success of the 5-year study, *Latino Farmworkers, Work Organization, Safety and Health* (Jennifer Swanberg, PhD; Jess Miller Clouser, MPH). This project is yielding promising results with two hard-to-reach populations: Thoroughbred farm managers and Hispanic employees. More than 98 participants to date have provided in-depth information about (1) job-related hazards, ill-health and injuries, as well as “close calls” or “near misses”; (2) work organization and structure in an understudied industry, (3) workforce demographics and (4) challenges and solutions related to health and safety or communication with non-English speaking workers. Preliminary results have been presented at the Annual Meeting and Exposition of the American Public Health Association Conference (APHA) and published in the *International Journal of Environmental Research and Public Health*.

**OSH – OHN Workforce Development.** During the period under review, and in particular through its NURSE-AP and Ag Safety and Health course offerings, the Southeast Center has enabled more than 30 students of the UK Colleges of Public Health and Nursing and Western Kentucky University to benefit from courses and seminars focused on the high-risk AFF sector. In so doing, the Center is responding to two critical calls for action: (1) the 1989 Report to the Nation (Merchant et al.) which noted that 8,000 nurses with training in agriculture were needed to meet the needs of rural communities, and (2) the 2011 NIOSH-commissioned Westat survey, which observed that U.S. demand for occupational safety and health services will significantly outstrip the number of professionals with the necessary training, education, and experience to provide such services (Westat 2011).

During the 09/30/12 –09/29/13 cycle, 5 graduate students completed CPH 728 (Advanced issues in Agricultural Safety and Health) and more than 27 students were enrolled in three new courses developed through the NURSE AP project:

Fall 2012 – WKU NUR317 (3 cr hrs; undergraduate and graduate levels) online Agricultural Nursing elective course piloted; 17 students completed course.

Fall 2013 – WKU NUR345 (formerly NUR 317). Online Ag Nursing course officially approved by Western Kentucky University; 10 students enrolled.

Jul 2013 – Doctoral Students at UK's College of Nursing, guided by Dr. Deborah Reed, developed an OEHN Continuing Education Course for occupational health nurses. This web course is free and available at the following link:

<http://academics.uky.edu/ukcon/pub/ContinuingEducation/Web%20Courses/Pages/OccupHealth.aspx>

Southeast Center-affiliated students received awards at the May 2013 Commencement ceremonies of the UK College of Public Health:

- Richard R. Clayton MPH Research Award: Raymond Hicks, MD, MPH
- Promising Practitioner Award: Jessica Clouser, MPH
- Departmental Award, Health Behavior: Sandra Maciuba, MPH

During the period under review, several faculty members were publicly honored as well:

- Golden Apple Award: Lorie Chesnut, DrPH, MPH; Dept of Epidemiology (UKCPH 2013 May)
- COPD Foundation 2013 Treatment Achievement Award: David M. Mannino, MD.
- AAOHN Fellow: Deborah B. Reed, PhD, MSPH, RN

**Dissemination and translation of products by partners.** During the period under review, the Center continued to expand its online/social media presence and online outreach activity. Sites now include



<http://www.mc.uky.edu/scahip/>



<http://www.eoponline.org>

<https://www.facebook.com/580178002007732>



<https://www.facebook.com/Agriculture.nurse>



<https://www.twitter.com/SCAHIP>

<http://www.youtube.com/watch?v=VfYLX4eJ0fk>



<http://www.youtube.com?USagCenters> (*cross-center collaboration*)

Dr. Deborah Reed, PD/PI for the 5-year project Nurses Utilizing Research, Service, and Education in Applied Practice (NURSE AP), has been invited to lead a 90-minute session at the annual conference of the American Association of Occupational Health Nurses (AAOHN) in May 2014. These sessions are highly prized and Dr. Reed reports that hers will be the first in the AAOHN history to highlight the agricultural industry.

Farm organizations that have welcomed NURSE AP presentations and/or taken up NURSE AP articles and materials have included Farm Bureau, the Farmer Veteran Coalition, Southeast Farm Press, Bluegrass Equine Journal, and Modern Farmer. Dr. Reed and her colleagues estimate that, during the period under review, NURSE AP outreach activities have directly reached more than 700 farmers and more than 700 health professionals, the majority of them nurses.



## SECTION II — DETAILED PROGRAM UPDATES

### Center-wide Activity: Administration

The Center received initial awards effective 09/30/11 for the first 8 projects and programs listed below, followed by later funding for a ninth project, Native American Safety and Health (funded as of 09/30/12). The Southeast Center received funding from 09/30/12 – 09/30/13 under CDC/NIOSH Cooperative Agreement 5U54OH007547-13.

1. Administration and Planning
2. Feasibility Studies and Emerging Issues Program
3. Outreach
4. Evaluation

### Research

5. Latino Farmworkers, Work Organization, Safety and Health

### Prevention/Intervention

6. Economics of Prevention: Extending Impact, Reducing Risk

### Education/Translation

7. Nurses Utilizing Research, Service, Education and Practice (NURSE-AP)
8. Graduate Certificate in Agricultural Safety and Health
9. Native American Agricultural Safety and Health

During the period under review, the award or completion of sub-contracts included 8 feasibility projects:

1. Integration of Cost-Effective ROPS (CROPS) Construction and Installations into Agricultural Mechanics Courses. Stacy Vincent, PhD; UK College of Agriculture, Food & Environment. 09/30/2012 – ongoing
2. Assessing the Effectiveness of Audience Response System Technology in Pesticide Applicator Training. W. Gregory Cope, PhD; Department of Environmental & Molecular Toxicology; North Carolina State University. 09/30/2012 – 09/29/2013
3. Triazine herbicides and birth defects in Kentucky. Steve Browning, PhD; David R. Bardach, PhD student; Departments of Epidemiology and Biostatistics, University of Kentucky. 09/30/2012 – 09/29/2013
4. Emergency Tractor Shut-Off using a Voice Command System. Glen Rains, PhD; Dept of Biological & Agricultural Engineering, University of Georgia. 09/30/2012 – 09/29/2013
5. Environmental impacts on effectiveness of permethrin-treated clothing used by foresters to prevent mosquito bites. Effectiveness of insecticide-treated clothing to prevent tick and mosquito exposures in foresters. Stephanie L. Richards, MSEH, PhD; Environmental Health Sciences Program, East Carolina University. 09/30/2013 – 09/29/2014. Cf. Effectiveness of insecticide-treated clothing to prevent tick and mosquito exposures in foresters. CARERC, 09/30/12\*– 06/30/2013
6. Sun protection behaviors among Hispanic farmworkers. Greg Kearney, DrPH, MPH; Department of Public Health, Brody School of Medicine, East Carolina University. 09/30/2013 – 09/29/2014.

7. Effects of obesity on the work and safety of farmers. Sharon Hunsucker, RN, MSN, ARNP, PhDc; UK College of Nursing. 09/30/2013 – 09/29/2014.
8. West Virginia Logger Hazard Awareness and Injury Risk Perception. Marc Fullen, EdD, CSP; Safety & Health Extension; West Virginia University. 09/30/2013 – 09/29/2014.

Personnel changes: In December 2012, founding director Dr. Robert McKnight took medical leave from the University of Kentucky and his placement on Long-Term Disability became effective July 1, 2013. This and other adverse circumstances have forced a major delay in development of the **Graduate Certificate in Agricultural Safety and Health**. Dr. David Mannino became Director of the Southeast Center as of July 1, 2013. CPH 728b *Advanced Issues in Agricultural Health* was cancelled for the Spring 2013 term; in Dr. McKnight's stead, CPH 728-001 *Health of Agricultural Populations* (Fall 2013) was taught by Baretta R. Casey, MD, MPH, FAAFP. From 2005–2010 Dr. Casey served as Director of the UK Center for Excellence in Rural Health (Hazard, KY). Course-related site visits to agricultural production facilities were arranged in Fall 2013 by Dr. Purschwitz, Extension Professor in the UK College of Agriculture, Food, and the Environment.

Contract negotiations with Poarch Band of Creek Indians (Atmore, AL) failed in early 2013, requiring attempted overhaul of the **Native American Ag Safety and Health** study. The Center ended interaction with the Poarch Band and initiated discussions with UK alumna Sarah McClellan-Welch of the Eastern Band of Cherokee Indians/ NCA&T State University Cooperative Extension, regarding work safety issues in the Eastern Cherokees' North Carolina community and potential collaboration with the Cherokee nation in Oklahoma. Drs. Sanderson and Mannino continue to confer with Dr. Lori Chesnut of the UK College of Public Health and Ms. McClellan-Welch toward potential redirection of this community-based participatory research project. This project was discussed briefly during a recent site visit from NIOSH OASH Director Captain Brad Husberg and Pietra Check, who recommended further consultation with the Office of Extramural Programs (Robison, Dearwent, et al.). Drs. Mannino and Sanderson will be visiting Cherokee nation researchers on March 2 and 3, 2014, to explore the possibility of completing this project at the Cherokee site.

## Relevance and Impact

The impact of the Southeast Center is perhaps most salient in five areas:

1. **Educating and training nurses and public health professionals** who are equipped to help prevent injuries and reduce economic costs through the promotion of work safety and health in production agriculture, forestry, and commercial fishing. During the period under review, and in particular through its **NURSE-AP** and *Health of Agricultural Populations* programs, the Southeast Center has enabled more than 30 students of the UK Colleges of Public Health and Nursing and Western Kentucky University to benefit from courses and seminars focused on agricultural safety and health. In so doing, the Center is responding to two critical calls for action: (1) the 1989 *Report to the Nation* (Merchant et al.) which noted that 8,000 nurses with training in agriculture were needed to meet the needs of rural communities, and (2) the 2011 NIOSH-commissioned Westat survey, which observed that U.S. demand for occupational safety and health services will significantly outstrip the number of professionals with the necessary training, education, and experience to provide such services (Westat 2011).



During the 09/30/12 –09/29/13 cycle, 5 graduate students completed CPH 728 (Advanced issues in Agricultural Safety and Health) and more than 27 students were enrolled in three new courses developed through the NURSE AP project. See individual progress reports.

Southeast Center-affiliated students received awards at the May 2013 Commencement ceremonies of the UK College of Public Health:

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several faculty members were publicly honored as well:

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- COPD Foundation 2013 Treatment Achievement Award: David M. Mannino, MD.
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Zilahatou Tohon, MD, a student in CPH 778–404, *Improving Writing Skills for Public Health Research and Practice* (taught in Fall 2011 by Teresa Donovan, MPH) co-authored a peer-reviewed article published in May 2013: Jusot JF, **Tohon Z**, Yazi AA, Collard JM. Significant sequelae after bacterial meningitis in Niger: a cohort study. BMC Infectious Diseases (BioMed Central). 2013 May;13(1):228. PMID: 23687976.

Additional publications by former and current students, faculty, and affiliated researchers are listed below.

2. **Advancing knowledge** of the both the *effectiveness* and *cost-effectiveness* of roll over protective structures (ROPS) on farm tractors, and
3. **Encouraging uptake and use of personal protective equipment** to prevent injuries such as head trauma (i.e., helmets for horse and ATV riders) and noise-induced hearing loss.

Through the **Economics of Prevention** (EOP I & II more than 400 current and future educators in Kentucky, Georgia, Mississippi, Arkansas and North Carolina have been trained in the use of interactive farm safety narrative simulation exercises and injury cost analysis tools featuring embedded performance measures. When administered to representative samples of subjects, these innovative instructional tools provide immediate feedback that is useful for student correction and tailored instruction. At the same time, they obtain self-reported yet invaluable proxy surveillance data regarding worker demographics, hazard exposures, close calls, and injury events (Mazur et al., 2013). This represents a

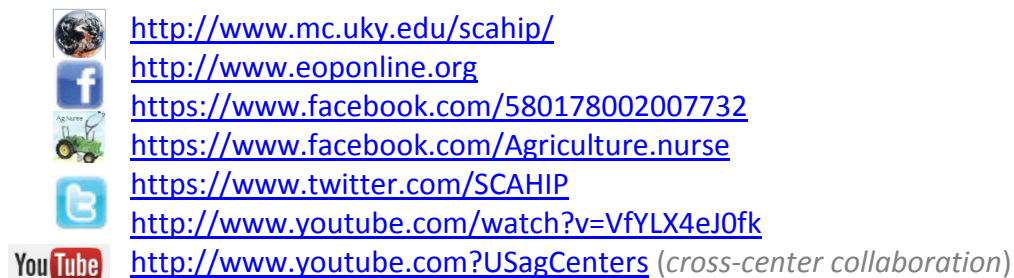


critical advancement in public health methodology because the absence of reported injuries and illnesses does not necessarily equal the absence of, or reduction, in risk/hazard exposures: Obtaining surveillance data on “close calls” and “near misses” is crucial to understanding opportunities for both improved control technologies and targeted behavioral interventions.

In a pilot intervention project aimed at promoting installation of rollover protective structures on tractors, Dr. Stacey Vincent and colleagues have adopted EOP materials for use in Agricultural Mechanics classes in rural Kentucky county high schools, demonstrating the materials’ utility in meeting state Core Curriculum standards. Regional FFA students earned a ribbon at the 2013 Kentucky State Fair for their design and installation of a cost-effective rollover protective structure (CROPS) for a local farmer. As of this report, high schools in 8 rural counties have demonstrated enthusiastic interest in the program: Whitley, North Laurel, and McCreary Counties (2013) and Boyle, Anderson, LaRue, Mercer and Nelson Counties (2014). See Feasibility Projects Program report and “Integration of Cost-Effective ROPS Construction and Installations into Agricultural Mechanics Courses.” PD/PI: Stacy Vincent, PhD; UK College of Agriculture, Food & Environment.

In keeping with its emphasis on education and outreach, the Southeast Center interacted with more than 150 future farmers at the **2013 FFA Convention** in Louisville, KY and there celebrated the forthcoming debut of the **Hazard Ridge** farm safety digital instructional game, developed through the Economics of Prevention project (Mazur et al.).

During the period under review, the Center expanded its online/social media presence and online outreach activity. Sites now include



4. **Understanding and protecting vulnerable workers**, in particular farm youth, older farmers, migrant / immigrant and contract laborers. The 5-year **Latino Thoroughbred Horse Farm Workers, Work Organization, Safety and Health** project has enjoyed substantial industry and community buy-in from its inception. The project’s Industry Advisory Council includes members of the Kentucky Thoroughbred Farm Managers Club, Kentucky Thoroughbred Association, farm owners, and human resource personnel. The Community Advisory Council includes members of the Kentucky Migrant Farm-workers with Disabilities Employment Partnership, Blue Grass Farms Charities, and the Migrant Network Coalition, et al. As of December 17, 2013, sixty (60) representatives of more than 30 regional horse farms had participated in a 20-minute phone survey and 2-hour in-depth interview. The Worker Survey was launched in October 2013 (n = 220).

Through the NURSE-AP project, Dr. Deborah Reed and colleagues have published 7 peer-reviewed articles specifically on the needs of older farmers (*Issues in Mental Health Nursing, Workplace Health and Safety, JASH, Journal of Agromedicine, et al.*). Dr. Reed continues to

collaborate with the Ohio Valley Ohio Valley Appalachian Regional Geriatric Education Center (OVAR GEC) to improve practitioners' understanding of issues affecting older farm men and women. See NURSE-AP report.

5. **Enhanced capacity and infrastructure** for agricultural occupational safety and health education and training at the University of Kentucky and multiple collaborating institutions. The NURSE-AP and EOP projects have supported the development of ag safety curriculum content and research opportunities at their respective collaborating institutions: i.e., Western Kentucky University, East Tennessee State University, Mississippi State University, Arkansas Tech University, and North Carolina A&T University. Through our Feasibility Projects program, the Southeast Center has supported promising new researchers at East Carolina University, the University of Georgia, North Carolina State University, and West Virginia University.

#### **Publications** (09/30/12 – 12/20/13)

Browning SR, Westneat SC, Sanderson W, Reed DB. Cattle-related injuries and farm management practices on Kentucky beef cattle farms. *J Agric Saf Health*. 2013;19(1):37-49.

Cole HP. Workplace injury and illness, safety engineering, economics and social capital. Chapter 13 in Gatchel Robert J., Izebela Z (Eds.). *Handbook of Occupational Health and Wellness*. New York: Springer, 2013. ISBN 978-1-4614-4838-9

Humann MJ, **Sanderson** WT, Donham KJ, Kelly KM. Task-based noise exposures for farmers involved in grain production. *J Agric Saf Health*. 2013 Apr;19(2):101-13. PMID: 23923730

Maciuba S, Westneat SC, Reed DB. Active coping, personal satisfaction, and attachment to land in older African-American farmers. *Issues Ment Health Nurs*. 2013 May;34(5):335-43. PMID: 23663020.

Mains E, Jones S. Linking community partners to increase tetanus immunizations among farmers. *Workplace Health Saf*. In review as of 0913. Work supported by NURSE-AP project, CDC/NIOSH Cooperative agreement 2U54OH007547-12.

McCallum DM, Murphy S, Reed DB, Claunch DT, Reynolds SJ. What we know about the effectiveness of farm safety day programs and what we need to know. *J Rural Health*. *J Rural Health*. 2013 Winter;29(1):20-9. PMID:23289651

Myers M. Exposure assessment of tractor-related tasks presenting potential overturn hazards on catfish farms in Mississippi, USA. *Hum Ecol Risk Assess*. 2013 Jun;19:959-71.

Pavilonis BT, Anthony TR, O'Shaughnessy PT, Humann MJ, Merchant JA, Moore G, Thorne PS, Weisel CP, **Sanderson** WT. Indoor and outdoor particulate matter and endotoxin concentrations in an intensely agricultural county. *J Expo Sci Environ Epidemiol*. 2013 Jan 16. PMID:23321860

Pavilonis BT, **Sanderson** WT, Merchant JA. Relative exposure to swine animal feeding operations and childhood asthma prevalence in an agricultural cohort. *Environ Res*. 2013 Jan 14. PMID:23332647

Rayens MK, Reed DB, et al. Predictors of depressive symptoms in older rural couples: the impact of work, stress, and health. *J Rural Health*. 2013 May 24. DOI: 10.1111/jrh.12028

Reed DB, Allen-Bryant K, Hunsucker S. Worker demographics and implications for the OEHN. In Moore R & Moore PV. Core Curriculum for Occupational and Environmental Health Nursing. Pensacola, FL: AAOHN, 2013 in press. This chapter includes a specific section on agricultural workers.

Silver K, Hoffman K, Loury S, Fethke N, Liebman A, Manz N, et al. A campus-community partnership for farmworkers' health: an intervention for tomato workers in Tennessee. Prog Community Health Partnersh [Johns Hopkins University Press]. 2015 Jan;9(1):pp-pp. Accepted for publication. Work supported by Feasibility Project funds, 01/01/2012 – 09/29/2013.

Sorenson JA, Jenkins PL, Bayes B, Madden E, **Purschwitz** MA, May JJ. Increases in ROPS pricing from 2006–2012 and the impact on ROPS demand. J Agric Saf Health. 2013 Apr;19(2):115-24.

Swanberg JE, Clouser JM, Browning SR, Westneat SC, Marsh MK. Occupational health among Latino horse and crop workers in Kentucky: the role of work organization factors. J Agromed. 2013;18:4: 312-25.

Swanberg JE, Clouser JM, Westneat SC, Marsh MK, Reed DB. A description of injuries on thoroughbred breeding farms among a Latino & non-Latino Workforce. Int J Env Res Pub Health. In review 2013 Aug 29 [open access journal].

#### *Abstracts / Posters/ Presentations*

Clouser J. En mis propias palabras: In my own words: A qualitative analysis of the job conditions and occupational safety and health of Latino horse breeding workers in Kentucky. UK College of Public Health Research Day, in conjunction with the 8th Annual Spring Conference of the Center for Clinical and Translational Science; Lexington, KY; 2013 Apr 8.

Cole HP, Westneat SC. ATV riding practices and accidents among high school students at a rural Kentucky high school. Technical paper TP13-9 presented at the 2013 Annual meeting of the International Society for Agricultural Safety and Health. Sandusky, OH; 2013 Jun 23-27.

Jones MS. Promoting safe practices on farms through the artistic expressions of youth. Poster presentation. International Society for Agricultural Health and Safety; Sandusky, OH; 2013 Jun.

Jones MS, Honaker A, Reed DB. Research to practice education using a modular distance learning approach. Poster presentation. Rural Nurse Educator Conference, Branson, MO; 2013 Apr 17.

LePrevost CE, Cope WG, Storm JF. Assessing the effectiveness of audience response system technology in pesticide applicator training. Paper presented at the 2013 Annual meeting of the International Society for Agricultural Safety and Health. Sandusky, OH; 2013 Jun 23-27. Work supported in part by SE Center feasibility project award, Start/end 09/30/2012– 09/29/2013.

Maciuba S. Factors that influence engagement in selective health behaviors of farmers ages 50 and older. Capstone defense. Lexington: University of Kentucky, 2013 Apr 16.

Mazur JM, Westneat SC. Understanding farmers' tolerance of high risk work: an apprenticeship of observation. Paper presented at the 2013 Annual meeting of the International Society for Agricultural Safety and Health. Sandusky, OH; 2013 Jun 23-27. ISASH paper 2013-TP8.

Mazur JM, Vincent S, Hains B, Meister J, Hoagland R, Watson J. Hazard Ridge. Educational Display. 2013 Annual meeting of the International Society for Agricultural Safety and Health. Sandusky, OH; 2013 Jun 23-27.

Mazur JM, Vincent S. Integration of cost-effective ROPS (CROPS) construction and installations into agricultural mechanics courses in four rural Kentucky counties. Paper presented at the 2013 Annual meeting of the International Society for Agricultural Safety and Health. Sandusky, OH; 2013 Jun 23-27. SE Center feasibility project, 09/30/2012–09/29/2013.

Mazur JM. Online and interactive child ag safety demo: ATV safety training game. North American Agricultural Safety Summit. Minneapolis, MN. 2013 Sep 26. [ASHCA]

Reed DB. Health and safety of America's agricultural workforce. 90 minute invited session. American Association of Occupational Health Nurses (AAOHN). 2014 May.

Reed DB. Not out to pasture: Work and health of aging farmers. UK Family Practice Grand Rounds. Lexington: University of Kentucky Hospital. 2013 Mar 20. 1 CME

Reed DB. Promoting a healthy and safe work environment for Kentucky farm families. Poster presentation. Kentucky Public Health Association Annual conference; Louisville, KY; 2013 Mar 28.

Reed DB, Jones MS, Honaker A, Claunch DT. Caring for the farm community – The heartbeat of America. Nurses utilizing research, service, education and practice (NURSE-AP). Poster. 2013 Annual meeting of the International Society for Agricultural Safety and Health. Sandusky, OH; 2013 Jun 23-27.

Reed DB. Getting older, getting wiser: tips on health and safe aging in farming. Kentucky AgrAbility Conference; Frankfort, KY; 2013 Jul 11.

Reed DB. Older farmers: assessing risk. National Farm Bureau Women's Leadership Conference; Las Vegas, NV; 2013 Apr 6.

Reed DB. Tractor ride for child has no place on farm. Southeast Farm Press. 2013 Aug 13. Accessed online at <http://southeastfarmpress.com/equipment/tractor-ride-child-has-no-place-farm> [2013 Sep 9].

Reed DB. Listen, learn, consult, and coach: Steps to changing farmers' work behavior. Annual Conference of the Kentucky Lake Chapter Occupational Health Nurses. Bowling Green, KY. 2013 Sep 25.

Reed DB. Pathways along the journey. Keynote address for the Epsilon Sigma Chapter of Sigma Theta Tau. East Tennessee State University. Johnson City, TN. 2013 Oct 17.

Sanderson WT. Coal workers' pneumoconiosis: an ancient disease that is still among us. 14th Annual Pilot Research Project Symposium. University of Cincinnati Education and Research Center. 2013 Oct 10.

Swanberg J, Clouser JM, Browning SR, Westneat SC, Webster MK. Occupational health among Latino horse and crop workers in Kentucky: the role of work organization factors. North American Agricultural Safety Summit. ASHCA. Minneapolis, MN. 2013 Sep 26.

Swanberg J, Clouser JM, Webster MK. From the employer's perspective: A mixed-methods look at the work organization and safety practices on horse breeding farms 141st Annual meeting and exposition of the American Public Health Association (APHA). Boston: MA. 2013 Nov 4.

Swanberg J, Clouser JM, Webster MK. What's perceived, what's experienced, what's reported: A mixed-methods description of injuries on horse breeding farms. APHA. Boston: MA. 2013 Nov 4.

Vincent SK, Welch B, Mazur J, Watson J, Maxwell L, Alston A. Human learning and transformational play: Using electronic gaming and agricultural education to reduce fatalities among teenage youth. Conference of the Southern Agricultural Economics Association. Dallas, TX. 2014 Feb 103.



## Feasibility Studies and Emerging Issues Program

The feasibility studies & emerging issues program is designed (1) provide initial funding to develop innovative methods of investigation and prevention/intervention in agricultural occupational safety and health; (2) stimulate investigators in diverse disciplines to apply their expertise to agricultural safety and health issues; (3) enhance external partnerships and cross-center collaboration; (4) provide seminal support for activities designed to move the results of research into practice; and (5) provide sufficient pilot data to pursue R-01 type funding.

A request for proposals was promulgated throughout the southeast region in April 2013 (application due date July 31). Following systematic independent review, announcement of 4 pilot awards was made in September 2013 for the 09/30/13–09/29/14 budget cycle:

**Sun protection behaviors among Hispanic farmworkers.** Principal Investigator: Greg Kearney, DrPH, MPH; Department of Public Health, Brody School of Medicine, East Carolina University. Total direct and indirect funds, \$14,108. Start/end 09/30/2013–ongoing. Skin cancer rates among Hispanic farmworkers are relatively unknown and studies of their sun protection behavior are limited. This study thus aims to (1) Evaluate sun protection attitude, knowledge and behaviors of Hispanic migrant and seasonal farm workers; and (2) Use data and information from Aim 1 to develop a culturally appropriate educational sun safety tool in English and Spanish to inform Hispanic farm workers of the dangers of excessive UVR sun exposure.

The investigators plan to measure the sun safety perceptions and behaviors of farm workers in two eastern NC counties (Halifax and Greene Counties,  $n = 125$ ). They plan to provide a crude estimate of (pre)cancerous skin conditions among outdoor farm workers; document (by using an electronic, time stamped, UVR dosimeter wristwatch) the extent and duration of UVR exposure among 4 subjects for approximately 8 weeks; and develop a culturally appropriate educational intervention.

**Relevance:** This study is consistent with NIOSH strategic goals regarding disease and injury surveillance among vulnerable populations. It may also help to improve our knowledge of change in worksite exposures resulting from introduction of new worker organization and deployment patterns, field and plant technologies, and climate change. (Cf. Gunderson and Bean, et al., 2013).

**Effects of obesity on the work and safety of farmers.** Principal Investigator: Sharon Hunsucker, RN, MSN, ARNP, PhDc; UK College of Nursing. Total direct and indirect funds, \$15,000. Start/end 09/30/2013–ongoing. This project seeks to describe the relationship between obesity and work ability, work productivity, and work-related injuries in farmers. This objective is in keeping with NORA II strategic goal 5: “To improve the health and well-being of agricultural workers by reducing occupational and contributing factors to acute and chronic illness and disease (NORA 2008). The project team will conduct anthropometric measurements and administer the work ability index (WAI) survey and work limitations questionnaire (WLQ) among farmers attending the National Farm Machinery Show, North American Livestock Expo, and other events ( $n > 394$ ). The WAI and WLQ were developed by the Finnish Institute of Occupational Health and Tufts Medical Center, respectively, and have established reliability.

**Relevance:** This project is in keeping with NORA II strategic goal 5: “To improve the health

and well-being of agricultural workers by reducing occupational and contributing factors to acute and chronic illness and disease (NORA 2008).

**West Virginia Logger Hazard Awareness and Injury Risk Perception.** Principal Investigator: Marc Fullen, EdD, CSP; Safety & Health Extension; West Virginia University. Total direct and indirect funds, \$14,998. Start/end 09/30/2013–ongoing. This project aims to develop a survey tool and collect pilot data on hazard awareness and injury risk perception data among West Virginia loggers and small company owners, as well as differences in risk perception between these groups. Specifically, the authors aim to (1) Develop a survey instrument designed to assess the level of hazard awareness among loggers and owner/operators; (2) Explore the level of hazard awareness and injury risk perception among loggers and logger owner/operators; (3) Identify differences in hazard awareness and injury risk perception between the two sub-samples, including a survey (n=100) and oral interviews among a sub-sample (n=15); and (4) Use the survey results to identify gaps in hazard awareness/injury risk perception among loggers and owner/operators in order to inform the development of future targeted interventions.

Companies logging in West Virginia are required by state law to have at least one certified logger supervising each crew; this logger must be on the job each day but does not have to be continuously present. Certification involves a 2–3 day training session incorporating best management practices, logging operations/chainsaw safety, and verification of first aid/cardiopulmonary resuscitation training. Re-certification, required within 3 years of initial certification, involves a 1 day session covering Best Management Practices updates, environmental practices, West Virginia Division of Forestry (WVDOP) district elective topics (e.g., roads, maps, reclamation, etc.) and verification of a valid First Aid card. Workshops are generally held 2 to 3 times per month at various locations across WV. Any given workshop is attended by approximately 20 loggers and logger owner/operators. Survey and interviews will be conducted among participants in the “Best Management Practices for Loggers” workshops offered through the WVDOP.

**Relevance:** Fullen et al. note that according to the U.S. Census Bureau, nearly 83% of all logging employers employed from 1 to 10 workers (Scott, 2004). Thus, this pilot study targets workers whose safety typically eludes OSHA oversight. The project addresses two NORA II priority areas for AgFF:

Strategic Goal 1: Improve surveillance within the Agriculture, Forestry, and Fishing Sector to describe: the nature, extent, and economic burden of occupational illnesses, injuries, and fatalities; occupational hazards; and worker populations at risk for adverse health outcomes.

Strategic Goal 6: Reduce the number, rate and severity of traumatic injuries and deaths involving hazards of forestry.

**Environmental impacts on effectiveness of permethrin-treated clothing used by foresters to prevent mosquito bites.** Principal Investigator: Stephanie L. Richards, MSEH, PhD; Environmental Health Sciences Program, East Carolina University. Total funds, \$14,994. Start/end 09/30/2013–ongoing. A CARERC pilot award was granted in late 2012 to Dr. Richards and Dr. Jo Anne Balanay (co-PI) for their intervention project, “Effectiveness of insecticide-treated clothing to prevent tick and mosquito exposure in foresters and loggers in western North

Carolina.” Ticks and mosquitoes are known to transmit pathogens that cause diseases such as Rocky Mountain spotted fever (tick), Lyme Disease (tick), West Nile fever (mosquito), and Eastern equine encephalitis (mosquito). The chief goal of that project was to assess risk and encourage uptake of protective clothing to reduce infectious disease exposures among forestry workers in Central Appalachia (ECU IRB protocol UMCIRB 12-001780 effective 2012 Oct 3). As of August 2013, nearly three dozen foresters (34) had been enrolled: KY, N=2; NC, N=12; TN, N=3; VA, N=14; WV, N=3. A total of 332 mosquitoes representing three genera and eight species were collected in May and June 2013. The researchers have entered their next phase of study with this second and more recent SE Center feasibility project award, “Environmental impacts on effectiveness of permethrin-treated clothing used by foresters to prevent mosquito bites.” The new activity aims to (1) Evaluate the effects of environmental exposure on the ability of permethrin-treated fabrics to induce mosquito knockdown and/or mortality; and (2) Assess the extent to which environmental conditions (e.g., light, temperature, humidity, number of washes) impact the concentration of permethrin in treated clothing.

**Relevance:** Reviewers of the NIOSH AFF program noted that “agricultural and forestry workers are the veritable ‘canary in the mineshaft’ when zoonotic disease outbreaks occur, given their proximity to animal and avian hosts.” (Gunderson & Bean, et al., 2013). Thus, NIOSH has been urged to “encourage targeted surveillance” and identify “worksites practice(s) that could reduce or eliminate known sources of zoonotic disease, while also encouraging analysis into zoonotic workforce risk.” This study is pursuing such strategic goals among workers in a very important regional sector: Forestry and Logging.

*Four feasibility projects funded during the 09/29/12 – 09/30/13 budget year are yielding a positive return on investment in terms of demonstrated knowledge transfer, uptake of new instructional approaches and technology, and the promotion of prevention through design (PtD):*

**Integration of Cost-Effective ROPS (CROPS) Construction and Installations into Agricultural Mechanics Courses.** Principal Investigator: Stacy Vincent, PhD, Assistant Professor, Agricultural Education, College of Agriculture, University of Kentucky. Co-investigator: Joan Mazur, PhD, Professor, UK College of Education. Total direct and indirect funds, \$15,000. Start/end 09/30/2012–ongoing. This project seeks to reduce exposure to tractor overturn hazards in rural Kentucky counties through the installation of cost-effective ROPS on unguarded tractors; test the feasibility of integrating CROPS construction and installation projects into required Agricultural Mechanics classes in four rural high school education programs; conduct a pre-post evaluation of knowledge/awareness of CROPS and increased skill in constructing and installing CROPS, using surveys of approximately 1000 agricultural education students in the four schools, interviews with teachers, and analysis of project logs; and finally, to disseminate findings from this study with educators nationally and at the state level (NAAE, FFA, et al.).

*"I definitely think it made them take a different look at safety on the farm. . . . this is a pretty rural area; safety is 9 times out of 10 not the biggest factor in mind when people are working on a farm. It made a lot of these kids think about they didn't have one on a tractor at home or how it could actually help if they did have one. . . . once they'd seen what was really involved in the project it really opened up their eyes to how important having a ROPS system on a tractor was."*

*-- Cameron Lee, educator and CROPS project participant*

During the period under review, teachers and students in McCreary and Whitley counties installed CROPS on 2 Massey Ferguson models and 2 Ford models, using plans from the NIOSH CROPS website. As of January 10, 2014, a total of 7 retrofits had been completed in McCreary, Whitley, and North Laurel County high schools. In 2014, five (5) additional high schools will participate in Boyle, Anderson, LaRue, Mercer and Nelson Counties.

**Relevance:** The CROPS project is helping to institutionalize field-tested instructional techniques for helping current and next-generation farmers recognize the high costs of injuries and the cost-effectiveness of prevention through design (PtD).

**Emergency Tractor Shut-Off using a Voice Command System.** Principal Investigator: Glen Rains, PhD, Associate Professor, Department of Biological and Agricultural Engineering, University of Georgia. total direct and indirect funds \$12,593. Start/end 09/30/2012–09/29/2013. This prevention through design (PtD) project has explored the feasibility of a voice-command emergency stop system on a tractor. The challenge: How to make voice commands recognizable from a when loud background (e.g., engine) noise is present. Dr. Rains *et al.* seek to develop a speech recognition system using CMU-Sphinx to enable a tractor to be shut-off using a linear actuator connected to the fuel shut-off system. During the period under review, Dr. Rains and his team conducted multiple signal-relay tests using a John Deere 5510 tractor toward development of a neural network and actuator that would function effectively in the presence of engine noise. Dr. Rains will present the team’s preliminary findings at the July 2014 meeting of the American Society of Agricultural and Biological Engineers: see Rains GC, Emergency tractor shut-off using a voice command system, Annual International Meeting of the American Society of Agricultural and Biological Engineers (ASABE); Montreal, Canada; 2014 Jul 13 - 16. Dr. Rains plans a related manuscript for submission to the Journal of Rural Health in 2014.

**Relevance:** The results of this research may inform future studies to increase the complexity of the interface to accomplish tasks such as automatically sending a help signal when the tractor operator is not responding or has not returned to his or her seat within a specific time period. In addition to potentially increasing emergency response times, improved voice-recognition technology may benefit older farmers and farmers with disabilities: cf., e.g., Jenan Jones Benson, “Injury and illness recovery,” Growing Magazine <http://www.growingmagazine.com/print-5135.aspx>.

**Assessing the Effectiveness of Audience Response System Technology in Pesticide Applicator Training.** Principal Investigator: W. Gregory Cope, PhD; Professor and Extension Leader, Department of Environmental & Molecular Toxicology; North Carolina State University. Total direct and indirect funds \$14,999. Start/end 09/30/2012– 09/29/2013. In North Carolina, 34,927 individuals are certified by the state Department of Agriculture as pesticide applicators. NC Cooperative Extension Service (NCCES) pesticide education coordinators provide continuing education for applicators. Prior evaluation of the use of audience response systems (ARS) among NC applicators in traditional classrooms indicate that ARS help to engage learners, enhance learning, and facilitate educators' responsiveness to the audience. An online survey of NC's pesticide education coordinators (60% response rate) showed that 75% had never used ARS when providing a program, but more than 83% were interested in participating in an ARS workshop and implementing the technology in future programs. Accordingly, the goal of this study is to examine the effectiveness of ARS in enhancing applicator safety lessons by

training and providing implementation support (10 months) to 15 pesticide education coordinators (3 in each of NC's five agricultural districts). Using an embedded experimental design, quantitative and qualitative data is being collected pre- and post-ARS implementation to assess the impact on applicators' learning experience and coordinators' responsiveness to learners.

From 60 pesticide education coordinators who responded that they were interested in participating in a workshop to learn more about ARS and then implementing the technology in future programs, 15 participants (3 from each of the 5 Cooperative Extension districts) and 5 alternates (1 from each of the 5 Cooperative Extension districts) were randomly selected for participation. Full-day workshops for participants and alternates were offered on February 14 and 22, 2013. A trainer from *Turning Technologies* provided web-based technical training in using ARS. The workshops also consisted of the project director's modeling of techniques for implementation of ARS during pesticide lessons. Through this pilot grant, a complete set of ARS technology was provided to each of the 5 NC Cooperative Extension Service districts. A sixth set is housed in Raleigh for use when the district sets are unavailable. Pesticide education coordinators have utilized their districts' ARS during their regularly scheduled CE / training sessions for pesticide applicators. Pesticide education coordinators complete a questionnaire related to their use of the ARS and its impacts on learner and educator behaviors after each pesticide applicator training session that they provide, up to a maximum of 5. As of December 2013, 11 coordinators had completed the questionnaire. The participating pesticide education coordinators have also been administering a questionnaire (on paper) for learners to complete at the end of training sessions in which ARS is utilized, in order to assess ARS impact on attitudes, interest, and engagement. Data collection will continue through the first quarter of 2014, and the project is on-schedule for the Final Report to be available by June 30, 2014.

**Relevance:** This study is evaluating a new instructional technology to improve the knowledge and knowledge retention of certified pesticide applicators trained in the State of North Carolina.

**Triazine herbicides and birth defects in Kentucky.** Principal Investigator: Steve Browning, PhD, Assistant Professor, Department of Epidemiology UK College of Public Health. Co-investigator: David R. Bardach, PhD student; UK Departments of Epidemiology and Biostatistics. Total direct and indirect funds, \$14,240. Start/end 09/30/2012–ongoing. This project aims to (1) develop, in collaboration with the Kentucky Department of Agriculture and the Kentucky Geologic Survey, a database of triazine herbicide usage and concentrations of triazine herbicides in Kentucky water systems by county and region, 1998-2007; (2) evaluate the correlations between agricultural activities (such as acres and bushels of crops produced), herbicide use, and concentrations of triazine herbicides in water systems using county and region as analytical units; (3) conduct an ecologic study of the association between the incident rate of various birth defects by county and region with triazine herbicide usage metrics and concentrations in water systems (in collaboration with the Division of Maternal and Child Health, Kentucky Department of Public Health).

**Relevance:** This study will contribute new knowledge in environmental health that is expected to enhance the safety of vulnerable populations, in particular women and children *in utero*.

## **Publications**

Rains GC. Emergency tractor shut-off using a voice command system. MSS to be submitted to J Rural Health. 2014.

Silver K, Hoffman K, Louri S, Fethke N, Liebman A, Manz N, et al. A campus-community partnership for farmworkers' health: an intervention for tomato workers in Tennessee. Prog Community Health Partnersh [Johns Hopkins University Press]. 2015 Jan;9(1):pp-pp. Accepted for publication. [Work supported by SE Center Feasibility Project funds, 01/01/2012 – 09/29/2013].

### *Abstracts / Posters / Presentations*

Rains GC. Emergency tractor shut-off using a voice command system, Annual International Meeting of the American Society of Agricultural and Biological Engineers (ASABE). Montreal, Canada. 2014 Jul 13 - 16.

Vincent SK, Welch B, Mazur J, Watson J, Maxwell L, Alston A. Human learning and transformational play: Using electronic gaming and agricultural education to reduce fatalities among teenage youth. Conference of the Southern Agricultural Economics Association. Dallas, TX. 2014 Feb 103.



## Latino Farmworkers, Work Organization, Safety and Health

*PD/PI: Jennifer Swanberg, PhD. Co-investigator: Deborah B Reed, PhD, RN, MSPH. Project Coordinator: Jess Miller Clouser, BA. Research Assistant: Mary Katherine Webster, BS.*

### Specific Aims

The goal of this 5-year, R01 research project is to improve the occupational safety and health of Latino workers by reducing job-level and work organization-related hazards in horse production. Specifically, four aims will be achieved: 1) identify job hazards and work organization factors inherent within horse production; 2) systematically describe Latino workers employed on horse farms in Kentucky, the types of illness, injuries and near miss incidents experienced by these workers and the circumstances around these incidents; 3) determine how work organization factors may increase exposure to and interact with these job hazards as well as occupational illness, injury and near misses among Latino workers; 4) develop and disseminate educational safety and health materials for horse farm owners/managers and Latino horse workers.

### Activities and Results

Over the past year, the Dr. Swanberg and her research team have met the following goals set for Year 2.

**1) Convene Community and Industry Advisory Council.** Advisory councils have been actively engaged in the project (Table 1), and each council formally convened twice in Year 2. The purpose of these meetings was to update council members on the study's progress, garner feedback on research methods, and continue to build rapport and commitment. The PI and project manager have also met one-on-one with council members to discuss recruitment strategies and to secure their endorsement of the project through a formal letter to participants (described in Goal 4).

**2) Finalize and Pilot Test Thoroughbred Farm Interview (Horse Farm Survey).** Utilizing feedback from our advisory councils, research team, and study consultants, the study protocol and research instruments were completed in Aug and Sept 2012. The Phone Interview (a 20-30 minute, phone-administered survey) gathers information about farm and workforce demographics, farm policies, practices and programs. The Farm interview (face-to-face, 1-3 hour qualitative instrument) collects farm representatives' perspectives on physical and social context of work, health and safety priorities and practices, incidence and context of work-related illnesses/injuries, and other workforce-related practices. When time and permission allows, photographs of threats or solutions to health and safety challenges are taken and documents related to injuries are collected.

**3) Complete evaluation of the first year's progress and potential impact of the project.** As this is primarily a research study, much of our evaluation centers on a process evaluation of research methods, advisory council engagement, and dissemination of information about the



*These horse farm workers have access to personal protective equipment and control technology as they prepare a mare for breeding. This study is exploring, among other work organization variables, the prevalence of PPE and its use on farms; the ability of managers and employers to communicate with workers; the ability of vulnerable workers to communicate with managers and employers; and the nature and extent of work injuries and illness.*

project. Table 1 reports information about member participation and progress made in disseminating information about the study. Research progress is reported in our enrollment table.

**4) Begin Data Collection for Thoroughbred Farm Interview.** Recruitment of 30-40 thoroughbred farms began in Oct 2012. Advisory council members provided a sampling frame of 82 farms. All farms received 2 letters signed by two advisory council members and Dr. Swanberg. Within a week of receiving the letter a trained interviewer contacted the farm to invite participation.

**5) Complete and analyze data from the Thoroughbred Farm Interview.**

Data collection has closed on the Thoroughbred Farm Review. In all 62 farms were deemed eligible out of the 82-farm sampling frame. Thirty-two farms participated in the telephone survey (51% participation rate) and 26 participated in both the telephone survey and in-depth interview (41% participation rate). Preliminary results have been shared with both advisory councils, presented at the American Public Health Association Annual Meeting, and have been published in the *International Journal of Environmental Research and Public Health*, an international peer-review journal.

**6) Develop, pilot test, and revise the Thoroughbred Worker Survey.**

Consultants and members of both advisory councils provided input and feedback into topics, scales, and strategies for the development and implementation of the survey to be administered to 220 Latino Thoroughbred workers. Advisory Council members were engaged in the development of this 37-page document, consisting of 462 questions related to job tasks, perceived hazards, injuries or near miss incidents, circumstances surrounding hazards and incidents, and other demographic and general health information. The survey was translated by a native Spanish-speaker, reviewed and edited by a second native Spanish-speaker, and further reviewed, edited, and pilot tested by 4 native Spanish-speaking interviewers. Lay health promoters (Promotoras) who are integrated into the local Latino community are recruiting participants and conducting the interviews through a community-based sampling methodology. Their training consisted of 3 two-hour training sessions and completion of 3-5 observed pilot interviews. As of 12/17/13, 60 interviews had been completed, each lasting between 1-1.5 hours.

**7) Change of PI Status.** The research team transitioned to a different leadership structure on July 1, 2013 because Dr. Swanberg moved from the University of Kentucky to University of Maryland (UM). Although Dr. Swanberg continues to provide overall leadership and direction of the project, Jess Miller Clouser, MPH has assumed the principal investigator role at the

Table 1 Process Evaluation	Y1*	Y2*	Y3*
<b>Advisory Board Activity</b>			
<b>Industry Council</b>			
Formal Mtgs (cumulative attendance)	2(7)	2 (7)	0(0)
1:1 Meetings with Members	8	3	0
1:1 Consultations with Members	20	10	0
Formal Industry Endorsements	6	12	0
Team Attendance at Industry Meetings	5	1	0
<b>Community Board</b>			
Formal Mtgs (cumulative attendance)	1(8)	2(19)	0(0)
1:1 Meetings with Members	6	6	19
1:1 Consultations with Members	7	11	5
Team Attendance at Community Meetings	2	4	0
<b>Translational Activity</b>	<b>Y1</b>	<b>Y2</b>	<b>Y3</b>
Accepted Manuscripts	1	1	1
Academic Presentations	1	2	1
Non-Academic Presentations	2	1	0
Project Web Page Total Views	10	104	18
Media Coverage, Total # of Outlets	0	39	0

\*Y1= Oct 2011-Sept 2012, Y2= Oct 2012-Sept 2013, Y3=Oct 2013-Dec 2013

University of Kentucky, managing the day-to-day administration and operations of the project. A subaward has been issued to UM for Dr. Swanberg's effort on the project.

## Relevance

Our research is yielding promising results with a **hard-to-reach employer population**—Thoroughbred farm representatives. Participants have agreed to provide in-depth information about (1) job-related hazards and ill-health and injuries; (2) work organization and structure in an understudied industry, (3) workforce demographics and (4) challenges and solutions related to health and safety or communication with non-English speaking workers. The final response rate of 51% for the phone interview illustrates the industry's commitment to this project. Preliminary results from the Thoroughbred Farm Review have been shared with both advisory councils, presented at the American Public Health Association Conference, and published in the *International Journal of Environmental Research and Public Health*. In addition, the team is currently preparing a series of issue briefs to be distributed back to farm representatives that report research findings which are organized according to topical issues that are addressed in the data collected. The anticipated impacts of the overall study are threefold: (1) identify job hazards on horse farms; (2) determine how work organization factors contribute to job hazard exposure; and (3) improve understanding of the interplay between these workplace conditions and injury, near miss incidents, or ill health among a Latino workforce. Study results will have practical application to the horse industry and its Latino workers, and hopefully to other hazardous industries as well.

## Plans

Year 3 will see continued progress on data collection for the Latino Thoroughbred Worker Survey, data analysis on the Thoroughbred Farm Review and the Latino Thoroughbred Worker Survey, and continued creation of both academic and community-targeted publications.

## Publications

Project Web page: <http://www.uky.edu/Centers/iwin/thoroughbred.html>

Swanberg, J. E., Clouser, J. M., & Westneat, S. (2012). Work organization and occupational Health: Perspectives from Latinos employed on crop and horse breeding farms. *American Journal of Industrial Medicine*, 55(8), 657-745. doi: 10.1002/ajim.22032.

Swanberg, J. E., Clouser, J. M., Browning, S. R., Westneat, S., & Webster, M. K. (2013). Occupational Health among Latino Horse and Crop Workers in Kentucky: The Role of Work Organization Factors. *Journal of Agromedicine*, 18(4), 312-325. doi: 10.1080/1059924X.2013.826604

Swanberg, J., Clouser, J. M., Westneat, S. C., Marsh, M. W., & Reed, D. B. (2013). Occupational Injuries on Thoroughbred Horse Farms: A Description of Latino and Non-Latino Workers' Experiences. *International Journal of Environmental Research in Public Health*, 10(12), 6500-6516. doi: 10.3390/ijerph10126500

## Nurses Utilizing Research, Service, Education and Practice (NURSE-AP)

*PD/PI: Deborah B. Reed, PhD, RN, MSPH*

The long-term goal of the NURSE-AP project is to provide farm communities with tailored, evidence-based health care and health promotion delivered by transdisciplinary teams. The intermediate goal is to advance agricultural health and safety nursing practice through emerging education and communication strategies, new clinical interventions, service learning, and community collaborations. This 5-year educational **r2p** project addresses barriers to optimal care created by delayed access to agricultural health and safety research, lack of evidence-based nursing practice tailored to local farm communities, and the limited number of nurses with expertise in agricultural health and safety. The NURSE-AP project includes collaborating faculty at the University of Alabama-Birmingham, Western Kentucky University (WKU), East Tennessee State University (ETSU), and Southeastern Louisiana University (SELU).

### Specific Aims

This education/translation project aims to (1) Collect, package, and deliver state-of-the-art farm health and safety research to clinical and academic nurses and students using emerging e-learning technologies and social media. (2) Develop innovative strategies for nurse students and other students to develop expertise in agricultural health and safety. (3) Increase the capacity of nurses to develop and deliver tailored health programs for local farm constituencies. (4) Strengthen and increase a networked cadre of agricultural health nurses in practice, education, and research settings that can sustain the project post-funding. Methods include emerging pedagogy, mass communication information dissemination strategies, student internships and individualized study, faculty and clinical practice fellowships, and consultation services for agricultural nursing research and practice.

### Activities and Results

The impact of the project has exceeded expectations. Farm organizations and the farm press are utilizing information from the project and issuing requests for in-person presentations from the PI, which are honored if possible. To date and including the past funding period, 10 presentations and 4 farm press articles have been completed by the PI. In addition, 1-2 requests per week for more information, copies of *PowerPoint*® slides, *etc.*, come to the PI. Although nurse and other health professionals remain at the center of the project, we have expanded our reach to include the end users: farmers themselves. These activities directly reached at least 720 farmers and 701 health professionals, of which 692 were nurses. Some presentations were national in scope; state based work included Kentucky, Tennessee, West Virginia, and Pennsylvania. Farm organizations have included the Farm Bureau, Farmer Veteran Coalition, Southeast Farm Press, *Bluegrass Equine Journal*, and *Modern Farmer*. In addition, we presented 4 posters at health-related conferences. Dr. Reed is expected to be invited to the State Safety Board of the KY Farm Bureau as a result of this work. She also will have a 90 minute session at the annual conference of the American Association of Occupational Health Nurses (AAOHN) in May 2014. These sessions are highly prized and Dr. Reed's will be the first in the AAOHN history to highlight the agricultural industry.

Facebook page ([www.facebook.com/Agriculture.nurse](http://www.facebook.com/Agriculture.nurse)): Uptake is improving with 80 “likes.” Part of the challenge is typically the worksite setup of nurses’ computers, which are often blocked from accessing social media. New participants include farmers who utilize the content in community presentations and electronic newsletters and/or Facebook pages. The most popular NURSE-AP post to date was the *Safety Christmas List for Farmers* (274 hits). Several of our Facebook postings have promoted further inquiry and/or are being further disseminated by viewers (as reported by viewers; there is no way to track the actual “shares”).

### **Instructional Courses Developed and Offered**

**Fall 2012 – WKU NUR317** (3 credit hours, undergraduate and graduate levels) online Agricultural Nursing elective course developed and piloted. 17 nursing students completed course. Evaluations highly favorable for content, delivery, and applicability to practice.

**Fall 2013 – WKU NUR345** (formerly NUR 317). Online Agricultural Nursing course officially approved by Western Kentucky University. This is the only course we’re aware of that focuses specifically on nursing and agricultural health and safety. 10 nursing students enrolled. Dr. Reed reports that a total of 26 students completed NUR317 and NUR345 in 2012 and 2013.

Evaluation data indicate a positive learning experience for the students with 96% of the students reporting they could apply information/skills learned in the course. Although the course was designed as an educational offering for nurses, requests for presentations have resulted in guest lectures using specific course content for the American Association of Occupational Health Nurses, Rural Nurse Organization, American Farm Bureau, the Farm Veterans Coalition, and the USDA AgrAbility Project, among many others.

**Jul 2013 – CE Course launched.** Doctoral Students at the University of Kentucky’s College of Nursing, guided by Dr. Deborah Reed, developed an OEHN Continuing Education Course for Occupational Health Nurses that has relevant information for Ag Nurses. This web course is free and available at the following link:

<http://academics.uky.edu/ukcon/pub/ContinuingEducation/Web%20Courses/Pages/OccupHealth.aspx>

### **Student Involvement with Agricultural Safety and Health**

Feb 2013 – UK CON PhD student focusing on obesity and farm work injury and productivity completed her qualifying examination (Sharon Hunsucker, ARNP, PhDc).

Apr 2013 – Two students (one RN and one social work) defended their MPH capstones. Dr. Reed served on their committees. Work focused on older farmer’s preventive health measures and Latino Farmworker Safety, respectively.

Aug 31, 2013 – Dr. Reed served on a dissertation committee of a Finnish agro-technology student whose topic is work and work stress among Finnish dairy farmers. Marja Kallioniemi, University of Helsinki, *Well-being at Work on Farms in Finland*, defended August 31, 2013.

Sept 2, 2013 – Dr. Reed serving on dissertation review for Susan Brumby, RN Australia. Topic: *Farm work and family health: A study on farming family health across selected agricultural industries in Australia*.

October 2013 – One undergraduate research intern completed her project on using Appreciative Inquiry in farm research (J Coles)

### **Project assessments and internal functions**

Fall 2013 – Completed rural nurse and occupational health nurse **needs assessments**. Primary social media used for educational purposes are Webinars. Many reported being blocked from social media at work. Our list serve is being used less but we continue to use it because of the Facebook blockage at work sites.

Jan 18, 2013 – The NURSE-AP advisory board met. Discussion centered around CE platforms and free access possibilities. Ms. Ehlers (NIOSH) noted the importance of NURSE-AP in dissemination of her hearing loss prevention project as an example of R2P. Advisory members contributed video content for course.

Apr 2013 – Dr. Reed appointed a Fellow of the American Association of Occupational Health Nurses (AAOHN).

Jun 2013 – Dr. Reed continues her editorial board memberships and was elected to a 3-year term on the Board of Directors of the International Society for Agricultural Safety and Health (ISASH).

Aug 14, 2013 – Dr. Jones received certification in agricultural safety through the University of Iowa Agromedicine course.

Dr. Reed continues her work with the Ohio Valley Appalachian Regional Geriatric Education Center (OVAR GEC) emphasizing aging farmer issues.

We continue to compile a systematic listing of nurse-authored Ag health/safety publications. The retirement of Bernadette Hodge (NYCAMH) who had contributed to this endeavor leaves us searching for an alternative.

### **Relevance**

This project has a direct impact on farmers and their families across the U.S. as noted by the new associations with multiple farm organizations and the continued work with media and other institutions. It shows the hunger that farm families have for health and safety information delivered by nurses who understand and appreciate their work. The presentations have a global reach and the new fully approved on-line course (NUR345) proved successful and influences the practice of new nurses. All these indicators point to the rapid translation of research to practice (r2p) that this project accomplishes. The project demonstrates a further “ripple effect” impact, as many disciplines and the public look to the project for guidance, education, and resources.

### **Plans**

- Disseminate syllabus of on-line course to two additional schools.
- Complete 1 hour CE module on psychological issues in farming and offer on-line (target February 2014).
- Explore **YouTube** presentation format for short burst topics (planning at least two pilots). Continue to respond to requests of professional organizations such as Farm organizations, Farm Press, and nursing organizations for speaking and information.



- Fund one PhD dissertation and seek DNP participation. Invited faculty presentations (Reed) at Pennsylvania Farm Bureau, March 2014, and Lincoln Memorial University, Harrogate, TN, April 2014.

## Publications

Note: nursing students were coauthors in both publications, as indicated by asterisk\*

Maciuba SA,\* Westneat SC, **Reed** DB. Active coping, personal satisfaction, and attachment to land in older African-American farmers. *Issues in mental health nursing*. 2013; 34(5):335-43. PMID: 23663020 [PubMed - in process]

**Reed** DB, Allen-Bryant K., Hunsucker S\* Worker demographics and implications for the OEHN. In Moore R & Moore PV. *Core Curriculum for Occupational and Environmental Health Nursing*. 4th ed. Pensacola, FL: AAOHN, 2013 in press. Includes a substantial portion devoted to agriculture.

*Accepted for publication:*

Main E & **Jones** MS. Linking community partners to increase tetanus immunizations among farmers. *Workplace Health and Safety*. Accepted 2013 Dec.

## Lay farm press publications

Reed D. Publications in the online edition of *Southeast Farm Press* (in equipment section): These short articles are data based and written for the farm community. *Southeast Farm Press* has a print circulation of 15,000. These articles are posted to daily email subscribers. Each article has received numerous online comments and inquiries back to Dr. Reed.

*“Tractor ride for child has no place on farm,” August, 13, 2013*

*“If it dangles, it tangles,” October 5, 2012*

*“Lend me a hand,” November, 2012*

*“All I want for Christmas,” December 2012*

## Economics of Prevention: Expanding Impact, Reducing Risk (EOP II)

*PD/PI: Joan Mazur, PhD*

The EOP I project (2006–2011, CDC/NIOSH Cooperative Agreement U50 OH007547 and supplemental) developed and evaluated online versions of narrative simulation exercises and injury cost analysis tools within college courses for post-secondary students preparing for careers as high school social studies and vocational agriculture teachers and agricultural Extension agents. Upon graduation, these professionals used the online exercises with hundreds of youths and adults enrolled in their respective educational programs. The **EOP II** project is expanding the use of digital, interactive instructional materials aimed at **promoting risk-hazard exposure reduction** among persons at-risk for farming-related injuries (in particular, injuries associated with farm tractor overturns, farm equipment/motor vehicle roadway collisions, head-injuries due to un-helmeted horse and ATV riding, and noise-induced hearing loss).

### Specific Aims

1. Strategically target Agricultural Education programs in the Southeast to expand the cadre of pre-career professionals trained in the use of online simulations, cost tools, and digital instructional materials that emphasize the cost-effectiveness of injury prevention.
2. Expand regional, national and global access to the Economics of Prevention: Social & Individual Costs course by making it available online in interactive Web formats.
3. Develop and field test several new highly engaging digital intervention products, requested by EOP1 partners, that include an internet game template from the research-tested simulations and economic cost tools from EOP1 and virtual tractor inspections that will motivate youth at high risk of injury to identify hazards and take preventive measures.
4. Conduct a multi-state controlled evaluation utilizing the reliable EOP1 measures with the addition of a revised behavioral intention measure that provides greater sensitivity to impact and behavioral change regarding safe farm practices.

### Activities and Results

**Aim 1. Strategically target agricultural education programs in the Southeast.** UK Office of Research Integrity IRB protocol 11-0940-P4S, approved 01/06/2012. As part of our Year 2 UK IRB renewal, we added North Carolina Agricultural & Technical State University (NCA&T, Dr. Antoine Alston) and Arkansas Technical University (ATU, Dr. Lucas Maxwell). Adding NCA&T was a complicated process that took 10 months to complete. Data collection: Fall 2013 marked the beginning of our intervention group data collection with our multi-state partners. NCA&T began in January 2014 due to IRB issues and server/ technology issues. We continue meeting with our Agricultural Education partners (Hains/ Vincent/Alston/Maxwell) via Skype. Data collection with first-time Ag Ed pre-service teachers began with the Spring 2012 semester at the University of Kentucky site and continues to date (n=189 across the four sites). As mentioned in our previous annual report, the data collection for control groups (as indicated in our Research Design, control groups include classes in Agricultural Education and Ag Economics at the University of Kentucky) was also completed during the Fall 2012 semester (n = 195). Our 2013 Enrollment Table reflects the 189 additional participants.

**Aim 2. Expand regional, national and global access to the *Economics of Prevention: Social & Individual Costs* course by making it available online in interactive Web formats.** Mark Schneider, PhD candidate, formerly our part-time grant coordinator, continues working on a limited basis for the EOP II project (having secured full-time employment with the UK College of Medicine Distance Learning Program). His time overload of 8 hours weekly is dedicated to maintaining the EOP II Web site <http://eoonline.org> and assisting with additional tools for the online *Economics of Prevention: Risk and Social Costs of Ag Injury* course offered during the 4-week summer session at UK. Webcasts of materials and measures are available online for the course. Piloted in blended/hybrid format in Year 1, it was offered in May 2013 (grant year 2) in a fully online format (as a final full asynchronous pilot). We are advertising the online course nationally during the last week of February 2014 and have arranged with the University of Kentucky graduate school for participants to take the course either as a full 3-credit graduate offering *or* for Continuing Education Units professional development (CEU option) at a reduced per credit hour fee.

**Aim 3. Develop and field test several new highly engaging digital intervention products that include an internet game template and virtual tractor inspections.**

*Hazard Ridge 3-D Immersive Learning Game.* To recap, the development of the *Hazard Ridge* interactive digital game progressed in a timely way in the first three quarters of Year 1. However, we encountered several issues related to product development in the final quarter of Year 1 that extended into Year 2. We were unable to find qualified graduate students through the usual university outlets (computer science, instructional design, communication, digital media) that in the past proved to be rich sources of qualified designers. Game design, which is highly innovative and still in its formative trajectory, requires high-end programming skills in “game development engines,” *i.e.*, software that produces interactive, 3-D products for game play. After three months of searching and examining products of potential contractors, we engaged a local game design firm, which began working in October 2012 to produce our ‘intervention’ materials: the *Hazard Ridge* game. **The immersive game was completed on schedule and field-tested by end of May 2013.** The game developers (SuperSoul, LLC, Lexington, KY) and Dr. Mazur presented an interactive poster/display at the June 2013 ISASH conference in Sandusky, OH. The game was well received and many health & safety professionals at the conference indicated high interests in developing similar applications for their various areas of agricultural safety and health.

*Virtual Tractor Safety Walk-around Inspection.* The *Virtual Tractor Safety Walk-around Inspection*, developed during Year 1, is now in pilot version on the National Agricultural Safety Database (NASD) 2.0 Training website. After initial piloting and field testing in year 1 and 2, with high school students, we have used the materials with adults at cooperative extension venues and we have found the need for additional revisions to the content. Specifically, the content is too dense and the program takes too long to complete. We now have a new ‘modularized’ version (in five parts) and additions to the interface to include enhanced user tracking to support multiple uses of the materials to complete the extensive virtual tractor inspection content. Dr. Mark Purschwitz has assisted with additional material reviews to support these revisions. A final field test in three Appalachian Kentucky agricultural education classes and the Cooperative Extension in those areas is slated for March 2014.

Dr. Mazur has engaged partners at HICAHS (Lorann Stallones, PhD) and at the Nebraska Center (Aaron Yoder, PhD), who also have NASD subcontracts for projects in several

conference calls with Conceptual Arts (the NASD 2.0 Training Tools development group) and shared the Web 2.0 tracking and training enhancement designs and development processes with them. We are planning a meeting at ISASH in June 2014 to further these discussions. The other Centers have differing content, but are interested in leveraging the user-tracking and other programming features of the *Virtual Tractor Safety Walk-around Inspection* with their content.

## Relevance

The uptake and institutionalization of farm safety materials into school curriculum requirements is a highly sustainable outcome of farm safety material development. Enlisting the support of local agricultural educators as safety advocates is inherently a scaleable safety intervention, as each teacher interacts with and influences hundreds of students in the course of a school year and extending over the course of a teaching career. Additionally, students in agricultural education classes typically become local community leaders and continue to impact the culture of farm safety in the rural communities in which they reside. An additional 189 (combined with last year's total of 195, n=384) students in ag education and economics have been trained in the use of ATV safety simulations and cost tools at the UK/Arkansas A&T, NCA&T sites, including those taking the online graduate course mentioned above. The graduate course in the *Economics of Prevention and Social Costs of Ag Injury* will again be offered in May 2014 online for continued dissemination of intervention materials. We anticipate an increase in students, due to extended national advertisement of the online course, and we hope to double our enrollment from 17 last year to 35-50 post-secondary participants.

## Plans

Complete *Hazard Ridge* intervention testing by December 2014 (Fall & Spring semesters at intervention sites). Conduct an EOP II Advisory Group meeting in April 2014. Present technical papers and poster accepted by the International Society for Agricultural Safety & Health (three submissions to ISASH, 2014 Jun). Analyze comparative data from interventions and from the *Virtual Tractor Safety Walk-around Inspection* in grant year 3.

## Publications

### *Manuscripts in preparation*

Mazur JM, Westneat, S. Barriers to agricultural safety with adolescent & adult farmer populations: Exploring apprenticeships of observation. Submitted to the J Agromedicine.

Mazur, JM, Schneider, M. Do agricultural safety games reflect sound prevention theory? A research to practice review. Mss submitted to the journal Games for Health.

### *Abstracts / Posters / Presentations*

Mazur, J. Hazard Ridge Immersive Economics of Prevention Safety Game. Presentation at the North American Agricultural Health & Safety Summit. Minneapolis, MN. 2013 Sept 26 [ASHCA].

Mazur JM, Westneat SC. Understanding farmers' tolerance of high risk work: an apprenticeship of observation. Paper presented at the 2013 Annual meeting of the International Society for Agricultural Safety and Health. Sandusky, OH; 2013 Jun 23-27. ISASH paper 2013-TP8.

Mazur JM, Vincent S, Hains B, Meister J, Hoagland R, Watson J. Hazard Ridge. Educational Display. 2013 Annual meeting of the International Society for Agricultural Safety and Health. Sandusky, OH; 2013 Jun 23-27.

Mazur JM, Vincent S, Watson JM. Integration of cost-effective ROPS (CROPS) construction and installations into agricultural mechanics courses in four rural Kentucky counties. Paper presented at the 2013 Annual meeting of the International Society for Agricultural Safety and Health. Sandusky, OH; 2013 Jun 23-27. SE Center feasibility project, 09/30/2012–09/29/2013.

Vincent SK, Welch B, Mazur J, Watson J, Maxwell L, Alston A. Human learning and transformational play: Using electronic gaming and agricultural education to reduce fatalities among teenage youth. Conference of the Southern Agricultural Economics Association. Dallas, TX. 2014 Feb 103.

## Outreach

*PD/PI: Joan Mazur, PhD*

### Aims

(1) Obtain continuous input on agricultural safety and health concerns in the region; (2) identify priority topics for research and intervention, be they persistent and/or emerging problems; (3) cultivate improved access to Hispanic farm workers and other vulnerable populations; (4) ensure that farm safety instruction, guidelines, and other prevention activities are culturally, linguistically, and educationally appropriate; (5) achieve the widest possible diffusion of Center knowledge and research findings, including evidence-based “Simple Solutions”, work organization strategies, and best practices for farm safety and health; (6) develop multi-Center outreach strategy with the Northeast Center (Cooperstown, NY) and other NIOSH funded agricultural centers; (7) utilize state-of-the-art technology to package, market, and distribute field-tested agricultural occupational safety and health materials and tools; and (8) collaborate with the High Plains and Intermountain Center (Colorado State University) and Conceptual Arts, Inc., (Gainesville, FL) on expansion of the National Agricultural Safety Database ([www.nasdonline.org](http://www.nasdonline.org)) as the top online source for stakeholder access to resources and tools identified, developed, and evaluated by the NIOSH Agricultural Centers.

### Activities and Results

**Engagement with stakeholders** occurs through local, regional, and national meetings; through faculty service on community boards and committees, and through the annual Feasibility Projects Program, which extends Center reach throughout our 10-state region. A (tele)conference of the External Advisory Committee members and Southeast Center faculty and staff was held on October 25, 2013. Earlier the EAC and Center personnel met via (tele)conference on April 10, 2013. The Southeast Center regional Stakeholder Survey has been revised (Nov-Dec 2013) and we plan disseminate the survey in spring 2014. Regarding the first “Biennial Eastern United States Agricultural Safety and Health Conference: Bringing Research to Practice and Practice to Research (R2P2R)”: Plans for this joint meeting of the Southeast and Northeast Centers, et al., are currently on hold due to (federal) budget constraints. It is the general consensus that this meeting is a lower priority than funding more direct stakeholder efforts that are both successful and currently underway. Center faculty and staff have engaged in knowledge and data sharing through varied AFF sector and (other) scientific and trade conferences: *e.g.*,

- International Society for Agricultural Safety and Health (ISASH),
- Annual Conference of the Association of Occupational Health Nurses (AAOHN),
- North American Agricultural Safety Summit (ASHCA, 2013 Sep 26),
- Kentucky Association of Agricultural Educators (KAAE/NAAE),
- FFA Convention (2013 Oct), *et al.*

### Future farmers and the educators who lead them.

The SCAHIP exhibit at the National FFA Convention held in Louisville, KY, in October 2013 attracted contacts with more than 500 FFA members. Many of these future farmers subsequently visited Center social media (*i.e.*, Facebook and Twitter) and hundreds of



*FFA students visit the SCAHIP booth at the National FFA Convention 2013 Oct*



contacts, including high school vocational agricultural instructors, were added to the outreach mailing list.

### **Outreach via Integration of Agricultural Safety Materials in Public Schools: Curriculum Integration.**

We continue to work with three large agricultural education programs in Kentucky: Elkhorn Career & Technology Center, the Jessamine County Career & Technology Center, and the Locust Trace Agricultural Education High School in Lexington. These are now using the *Virtual Tractor Safety Walk-Around Inspection CD ROM* lessons as required curriculum materials in their agricultural mechanics classes. These outcomes result from Dr. Mazur's continued work with the

Kentucky Association of Agricultural Educators (KAAE). The Kentucky Department of Education/Career & Vocational Division is pursuing the design of a pilot project that will use the NASD tool (described below) for performance assessments for students in KY high school agricultural mechanics classes that emphasize farm safety units as part of new state required curriculum standards.



*FFA students converge on the Southeast Center Exhibit and Hazard Ridge digital farm safety demo at the October 2013 National FFA Convention, Louisville, KY.*

### **Seven (7) CROPS installations completed in 3 rural Appalachian counties, 5 additional counties on board in 2014.**

Drs. Vincent and Mazur have implemented an innovative program to integrate NIOSH Cost Effective ROPS Installation Plans as welding projects in agricultural mechanics classes in Whitley, North Laurel and McCreary Counties in Kentucky (08/2012-06/2013). The program engaged 92 students in these projects, and the resulting CROPS products were prominently displayed in the local press in these communities. For example: Byline: Carol Mills. NLHS Ag students build R.O.P.S. for farmer's tractor. The Sentinel Echo. May 2013. Local newspaper story about North Laurel County High School students in the Ag Power and Machinery class taught by Mr. Brandon Fawbush. Approximately 27 students participated in building CROPS for the Ford 400 tractor owned by Herschel Caldwell of Hazel Green/Cold Hill. The students installed CROPS on a 2nd tractor displayed at the Kentucky State Fair in August.

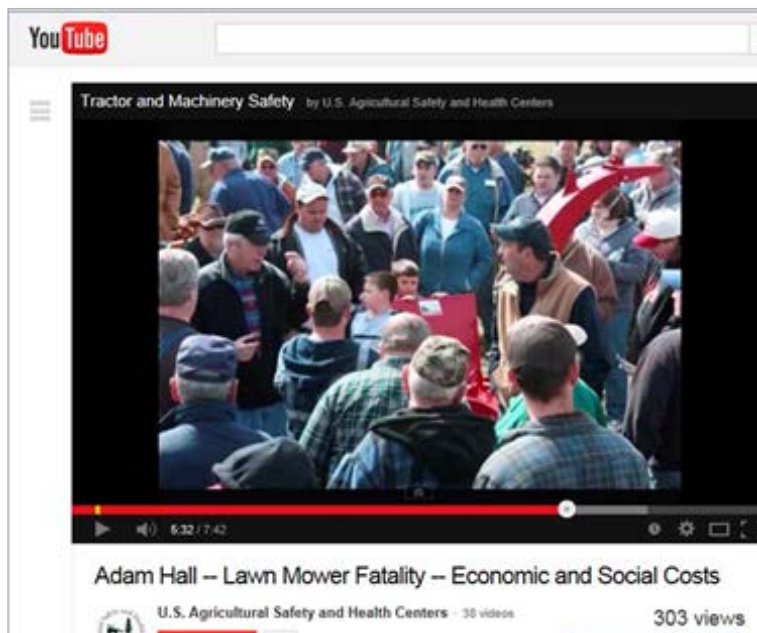
The CROPS project has been so successful that five (5) additional high school programs have been funded: Anderson, Boyle, LaRue, Mercer & Nelson Counties, and work and data collection on a projected ten (10) additional CROPS installations are underway.

**“ECO Group” Participation.** Dr. Mazur and Teresa Donovan have collaborated with the task-oriented group of evaluators, coordinators, and outreach personnel (ECO group) from the 10 funded NIOSH AgCenters. We have contributed substantially to the efforts of this group through monthly teleconferences (04/13–01/14) and sub-committee work resulting in aggregation of previous PR materials submitted for Congressional visits in 2012 (Donovan/McKnight) and 2013 (Donovan/Mannino), and development of a graphical template for any/all center use in 2014. We supplied Southeast Center Impact summaries and other material to inform the *ad hoc* design work of a private PR firm sub-contracted through the Northeast Center (FHI360). Mazur is also engaged as a member of the *outcomes evaluation* subcommittee of ECO. In April 2013 Donovan and Mazur attended the NIOSH Ag Centers Evaluation Workshop, incl. Drs. John Howard, Paul

Gunderson, et al., Fort Collins, Colorado State University (HICAHS). Presentation: Stone RS, Donovan T. Southeast Center Evaluation at a Glance. 2013 April 15-17.

### **USAgCenters YouTube Channel.**

Dr. Joan Mazur, Teresa Donovan MPH, and Mark Schneider, PhDc have participated in the planning and implementation of the [USAgCenters YouTube Channel](http://www.youtube.com/USAgCenters). At the Southeast Center, volunteer reviewers of videos submitted to the USAgCenters site included Dr. Deb Reed, Dr. Mark Purschwitz, Dr. Stacy Vincent (UK College of Agriculture), and Victoria Davis, in addition to Mazur, Donovan and Schneider. Three digital documentary submissions to the YouTube Channel from SCAHIP were accepted for upload on the Channel. These digital documentaries are products from the Economics of Prevention graduate online course, funded through the Economics of Prevention I and II projects (EOP1 & EOP2), which also now have dual outreach functions. The URL for the USAGCenters site is <http://www.youtube.com/UsAgCenters>



### **Social Media -- Southeast Center electronic outreach at a glance**



<http://www.mc.uky.edu/scahip/>



<http://www.eoponline.org>



<https://www.facebook.com/580178002007732>



<https://www.facebook.com/Agriculture.nurse>



<https://www.twitter.com/SCAHIP>



<http://www.youtube.com/USAgCenters>



<http://www.youtube.com/watch?v=VfYlX4eJ0fk>

**Outreach via social media:** Dr. Joan Mazur, Dr. Henry Cole et al. and Dr. Mark Purschwitz continue working with Jeff Nelson and Chris Knack of Conceptual Arts, Inc., to refine the design of online training tools and resources for the [National Agricultural Safety Database](http://www.nasdbase.org) (NASD). There have also been four conference calls with other [NASD](http://www.nasdbase.org) training groups funded at other NIOSH Ag Centers: HICAHS (Lorann Stallone, Alison DeVries) and the Nebraska Center (Dr. Aaron Yoder). The *Virtual Tractor Safety Walk-Around Inspection and Checklist* are in the final stages of development. Pilot training for use of the tutorial that was originally slated for

December 2013 with three Kentucky Agricultural Education high school programs (Whitley, Laurel and McCreary Counties) and UK Agricultural Education undergraduate classes (Drs. Vincent and Epps) will now begin in 1Q 2014. (A severe winter and frequent school closings due to “Snow days” have delayed this process in the public schools). With these tools NASD will be able to provide training and documentation of performance that can lead to various certifications, such as continuing education (CE) or training certifications.

**National Agricultural Safety Database (NASD) and Online Safety Training.** Conceptual Arts will continue to enhance the test/question management portion of the NASD training series so that staff can track answers to all questions by all users. This will aid in evaluation of simulation, course, and exam effectiveness. Conceptual Arts, Inc., 3909 Newberry Road, Ste A, Gainesville, FL 32607-2367; received Center sub-awards 09/29/10–09/29/11 (\$8,000) and 09/30/11–09/29/12 (\$8,000), and 09/30/13– 09/29/14 (\$8,000). <http://www.nasdonline.org/> and <http://www.nasdtraining.org/>

**Outreach to Hispanic farm workers** is conducted in large part with the help of Kentucky Children’s Health Insurance Program Coordinator Victoria Davis (KCHIP). Mrs. Davis serves on the board of the Migrant Network Coalition and assists in strategic and tactical planning at its monthly board meetings. Together with student volunteers participating in her KCHIP Experiential Learning Program here at the Southeast Center, Mrs. Davis has engaged Latino/Latina stakeholders at numerous community events; e.g., Festival Latino and Health Fair, 2013 Sep 20-22; Día de la Mujer Latina, 9th Annual Health Fiesta, 2013 Oct 19; YMCA Back to School rallies, 2013 Aug 3; Centro de Amistad/Annual Latino Festival, 2013 Jun; and many others. Mrs. Davis has also conducted community outreach through live interviews on *Radio Vida*, 1440am, WYGH (Dec, Nov, Aug, April 2013). Mrs. Davis also assists Dr. Jennifer Swanberg and Jessica Clouser with Spanish interpretation services on the 5-year project *Latino Farmworkers, Work Organization, Safety and Health*.



## Relevance

Southeast Center **outreach emphasizes purposeful, transdisciplinary approaches** for print, online, and face-to-face **delivery of proven safety and health information and training materials** to the field; that is, to farm owners and operators, hired workers, and the membership organizations, businesses and agencies that serve them. This translation of research activity to real-world application aims to achieve a positive return on investment.

## Plans

Stakeholder Survey – Spring 2014

CROPS in 5 Rural Kentucky Counties: January 2014 – May 2014

Monthly ECO conference calls – ongoing through year

NASD – Pilots in high schools

Bi-monthly meetings of SCAHIP Outreach Team

## Additional Examples – Outreach / Stakeholder Uptake

AgriSafe Webinar, 2013 Jun 5. Jess Miller Clouser, MPH, Research Associate, University of Kentucky Institute for Workplace Innovation. Topic: Latino Horse Farm Workers, Work Organization, Safety and Health (Salud y Seguridad del Trabajador Equino). Jessica Wilson, PhD, RN, APRN; Assistant Professor, UK College of Nursing. Topic: Characteristics of All-Terrain Vehicles and Their Operators on Kentucky Farms

Bopp S. Healthful Hints. Thrive: Growing Together. 2014 Feb. First quarter newsletter publication of [Syngenta, Inc.](#) Farm safety and health article quoting SCAHIP's Dr. Deborah B. Reed and other leaders in agricultural occupational safety and health education. Syngenta, Inc., informational at [www.syngenta-us.com](http://www.syngenta-us.com) Bopp article accessed online at [http://www.farmassist.com/Promo/Thrive/community/staying\\_healthy.html](http://www.farmassist.com/Promo/Thrive/community/staying_healthy.html) [2014 Feb 4].

Dr. Deb Reed has been invited to lead a 90-minute session at the annual conference of the American Association of Occupational Health Nurses (AAOHN) in May 2014. These sessions are highly prized and Dr. Reed reports that hers will be the first in the AAOHN history to highlight the agricultural industry.

David Robertson, Managing Director of QB Industries in Queensland, Australia continued to network in 2012– 2013 with SCAHIP-affiliated researchers (Purschwitz, Myers, Cole) regarding efforts in that nation to promote the installation of rollover protective structures on All Terrain Vehicles ([dave@QUADBAR.COM.AU](mailto:dave@QUADBAR.COM.AU)). Robertson utilized SCAHIP materials both in preparation for, and in follow up to, meetings with Mark Kumagai, P.E., Division Director, Mechanical Engineering, U.S. Consumer Product Safety Commission, et al., in July 2012.

Isabel Gereda Taylor, JD, LLM; Multicultural Affairs Coordinator; Lexington Fayette Urban County Government; 859-258-3824; contacted the SE Center via Dr. Mark Purschwitz for information regarding studies on green tobacco sickness (GTS). 2013 Jun 26.

Vincent SK, Welch B, Mazur J, Watson J, Maxwell L, Alston A. Human learning and transformational play: Using electronic gaming and agricultural education to reduce fatalities among teenage youth. Conference of the Southern Agricultural Economics Association. Dallas, TX. 2014 Feb 103.

Two Southeast Center articles received research paper awards at the 2013 Annual Meeting of the International Society for Agricultural Safety and Health:

Cole HP, McKnight RH, Donovan TA. Epidemiology, surveillance, and prevention of farm tractor overturn fatalities. *J Agromedicine*. 2009;14(2):167-171.

Saman D, Cole HP, Westneat MA, Carey DI, Weisenfluh GA, Odoi A. A spatial analysis of tractor overturns in Kentucky from 1960 to 2002. *PLoS One*. 2012 Jan;7(1). Open Access e-journal, Public Library of Science.  
<http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0030532>.

Annette Sudyka, CTPM; Texas Parks & Wildlife HOH Fisheries Science Center, and John Paret of Texas Parks & Wildlife Possum Kingdom State Fish Hatchery requested copies of two Southeast Center *Simple Solutions* booklets: Durborow, Myers, et al. [Safety for Ponds](#) and Durborow, Myers, et al., [Safety for Raceways](#). 2014 Jan. Copies had been distributed to state fisheries throughout the Southeast, Pacific Northwest and Idaho in 2011–2012.



## Evaluation

*Former PD/PI: Ramona Stone, PhD (09/30/11-09/29/13)*

*New PD/PI: Richard C. Ingram, PhD (09/30/13 -09/29/15)*

### Specific Aims

(1) Evaluate the cohesiveness and effectiveness of the Southeast Center in preventing agricultural occupational disease and injuries as a result of its transdisciplinary activities; (2) evaluate the impact of the Center on the safety and health of workers in production agriculture, forestry, and commercial fishing/ aquaculture through its research core; (3) evaluate the impact of the Center through its education/translation core; (4) evaluate the impact of the Center through its prevention/intervention core; and (5) collaborate with other NIOSH-funded Agricultural Centers toward development of a uniform, scientifically rigorous evaluation framework across the Agriculture, Forestry, and Fishing Initiative

### Activities and Results

**Aim 1.** Evaluate the cohesiveness and effectiveness of the Southeast Center in preventing agricultural occupational disease and injuries as a result of its transdisciplinary activities. This includes establishing an “infrastructure” for evaluation and ensuring that each project articulates and attains measurable outcomes. Toward this end:

During year 1, we had worked to achieve, without historical data loss, transition of the first-generation NIOSH Ag Centers’ Evaluation database to a more facile and informative online system. We sought to do so with help from Dr. Dong y Zhong, a Biomedical Informatics specialist in UK’s College of Public Health. Problems with felicitous data transfer proved insurmountable, however; so Dr. Stone decided in YR 2 not to move forward with use of the REDCap system for the development of an administrative database. Instead, Dr. Stone established a *SharePoint* Portal for secure, Password-protected, cross-campus and off-campus access to Southeast Center data and other files: <http://academics.uky.edu/CPH/SCAHIP>. Access to the portal requires a current and secure UK LinkBlue ID and Password, and tiered “permission” granted by the portal administrator (Stone/Administrative core). The ACE Access database was made available on SharePoint and PIs were asked to provide their project information directly and thereby share it with the evaluation core.

Compliance with requests to populate the system was mixed at best, however. Our hope and expectation is that a new Administrative Database planned by Dr. David Mannino – with support from new Evaluation PD/PI Richard Ingram and Administrative Assistant Amber Kidd – will elicit more uniform compliance.

Problems with database evolution notwithstanding, the Evaluation Core has continued to encourage PD/PIs to document not only outputs *but also* project outcomes (esp. intermediate outcomes) as defined by the NIOSH Logic Model for AgFF Evaluation (OEP 2012) and by key NIOSH external review documents. These documents include

- Gunderson P, Bean TL, Correa MT, et al. Comments on the Agriculture, Forestry, and Fishing (AgFF) National Research Program Sponsored by the National Institute for Occupational Safety and Health (NIOSH), Centers for Disease Control and Prevention (CDC). 2012 Jun 26 <http://www.cdc.gov/niosh/programs/agff/naseval.html>

- NIOSH Agriculture, Forestry, and Fishing Program Plan to Implement the National Academies Program Evaluation Recommendations, Draft 2009 Mar; Final 2011 Jan. Accessed online at <http://www.cdc.gov/niosh/nas/pdfs/AgFFImpPlanfinal.pdf>.

These NIOSH review documents informed and guided Southeast Center submissions to the NIOSH National Project Planning and Management (NPPM) system, as sent electronically to Dr. Sarah Felknor in August 2013. They have also informed summaries of Southeast Center impact as provided for the Association of University Programs in Public Health and Occupational Safety (AUPHOS, Dr. Fred Gerr, 10/1/13); the NIOSH Ag Center Directors meeting in Aurora, Colorado, 10/4/13; and the 2013 Annual Report.

**Aim 2.** Evaluate the impact of the Center on the safety and health of workers in production agriculture, forestry, and commercial fishing/aquaculture through its research core.

- **Latino Farmworkers, Work Organization, Safety and Health.** Dr. Jennifer Swanberg and her research team met the following Yr 2 aims: **(1) Convene Community and Industry Advisory Council.** The industry and community advisory councils each met twice in Year 2, as planned. Cumulative attendance: 7 and 19 members, respectively. There have been nineteen 1:1 meetings with Community council members in the 1Q of Yr 3. **(2) Finalize and Pilot Test Thoroughbred Farm Interview (Horse Farm Survey).** Telephone surveys were completed and on-farm interviews launched in 2013 in accord with the study timeline. The 20-30 minute telephone Interview gathers information about farm and workforce demographics, farm policies, practices and programs. The 1-3 hour on-site farm interview collects farm representatives' perspectives on the physical and social context of work, health and safety priorities and practices, incidence and context of work-related illnesses/injuries, and other workforce-related practices. **(3) Complete evaluation of progress and potential project impact.** The research team has emphasized process evaluation, including advisory council engagement and translational activity. The team reported 132 Web page views as of 12/17/13, news coverage in 39 media outlets, a presentation at the 2013 meeting of the APHA (Boston) and a peer-reviewed article in the *International Journal of Environmental Research and Public Health*. **(4) Begin Data Collection for Thoroughbred Farm Interview.** Advisory council members provided a sampling frame of 82 farms. Recruitment of 30-40 thoroughbred farms began in Oct 2012. **(5) Complete and analyze data from the Thoroughbred Farm Interview.** Out of the 82-farm sampling frame, 62 farms were deemed eligible; 32 farms participated in the telephone survey (51% participation rate) and 26 participated in both the telephone survey and in-depth interview (41% participation rate). **(6) Develop, pilot test, and revise the Thoroughbred Worker Survey.** Advisory Council members assisted in the development of this 37-page Spanish-language document, consisting of 462 questions. Promotoras have been recruiting participants and conducting the interviews through a community-based sampling methodology. As of December 17, 2013, sixty 60 interviews had been completed. Interviews continue in this first quarter of Yr 3 (2014).

**Aim 3.** Evaluate the impact of the Center on the safety and health of workers in production agriculture, forestry, and commercial fishing/aquaculture through its education/translation core.



- Nurses Utilizing Research, Service, Education, and Practice (NURSE AP)** (Dr. Deborah Reed). Progress by aim for Year 2 and 3 includes **(1) Delivery of online course(s) developed in YR 1.** In Yr 2, the online course WKU NUR345 (formerly NUR 317, with 17 students in Fall 2012) was officially approved by Western Kentucky University; 10 nursing students enrolled in Fall 2013. In July 2013 doctoral students at the UK's College of Nursing, guided by Dr. Reed developed an OEHN Continuing Education Course for occupational health nurses that has relevant information for Ag Nurses: <http://academics.uky.edu/ukcon/pub/ContinuingEducation/Web%20Courses/Pages/OccupHealth.aspx> **(2) CE module development and delivery:** The NURSE-AP advisory board met on Jan 18, 2013 and discussed CE platforms and free access possibilities. Janet Ehlers (NIOSH-Ret.) noted the importance of NURSE-AP in dissemination of her hearing loss prevention project as an example of R2P. The project team is working to complete a 1-hour CE module on psychological issues in farming (target date for online delivery; 2014 Feb). **(3) Conference presentations / Outreach & knowledge transfer.** During the period under review 10 presentations and 4 farm press articles have been reported by the PI. Audiences included stakeholders in Kentucky, Tennessee, West Virginia, and Pennsylvania, including members and/or subscribers of Farm Bureau, the Farmer Veteran Coalition, *Southeast Farm Press*, *Bluegrass Equine Journal*, and *Modern Farmer*. The PI estimates that invited presentations directly reached at least 720 farmers and 701 health professionals, of which 692 were nurses. Dr. Reed will lead a 90-minute session at the annual conference of the American Association of Occupational Health Nurses (AAOHN) in May 2014, which she indicates is the first in AAOHN history to highlight the agricultural industry. A peer-reviewed article was published by Dr. Reed *et al.* in *Issues in Mental Health Nursing* (PMID: 23663020) and an article by co-investigator Dr. Susan Jones is in press for *Workplace Health and Safety* (Main & Jones, 2014). As of this reporting date, Dr. Reed and doctoral student Kacy Allen-Bryant have a book chapter in production: Reed DB, Allen-Bryant K.\* Worker demographics and implications for the OEHN. In Moore R & Moore PV. Core Curriculum for Occupational and Environmental Health Nursing. 4th ed. Pensacola, FL: AAOHN, 2014 in press. **(4) Nurse Scholar fellowship.** In Feb 2013, Sharon Hunsucker, ARNP, PhD completed her qualifying examination. She is the recipient of a 2013 SE Center Feasibility Project award for her ongoing study "Effects of obesity on the work and safety of farmers," 09/30/13–09/29/14. **(5) Podcast production/other media** (collaborative) The *AgHere ListServ* is being used less often, but Dr. Reed and her colleagues continue to use it because of Facebook restrictions at many nurses's work sites. Uptake of the NURSE AP Facebook page ([www.facebook.com/Agriculture.nurse](http://www.facebook.com/Agriculture.nurse)) is improving with 80 "likes." The most popular NURSE-AP post to date was the Safety Christmas List for Farmers (274 hits). **(5) Webinar delivery.** Dr. Reed continues her work with the Ohio Valley Appalachian Regional Geriatric Education Center (OVAR GEC) emphasizing aging farmer issues. Dr. Susan Jones serves on the Education Board of the Rural Nurse Organization and presented a webinar for that organization on creating partnerships with Anabaptist communities (2012 Aug). An AgriSafe Webinar was presented on June 5, 2013 by Jessica Wilson, PhD, RN, APRN; Assistant Professor, UK College of Nursing. Topic: Characteristics of All-Terrain Vehicles and Their Operators on Kentucky Farms.

**Aim 4.** Evaluate the impact of the Center on the safety and health of workers in production agriculture, forestry, and commercial fishing/aquaculture through its prevention/intervention core.

- Economics of Preventing Injuries to Adolescent and Adult Farmers (EOP II) (Dr. Joan Mazur). Project **Aim 1:** Target Ag Education programs in the Southeast to expand the cadre of pre-career professionals trained in the use of online simulations, cost tools, and digital instructional materials that emphasize the cost-effectiveness of injury prevention. Met: North Carolina A&T (Antoine Alston) and Arkansas Tech University (Lucas Maxwell) added to IRB protocol and data collection activity initiated. **Aim 2:** Met. Expand access to the EOP Risk and Social Costs of Ag Injury course: Met. In 2013 the course moved from a blended/hybrid format to full online delivery. It will be nationally advertised and offered again in May 2014, for either 3 cr hours or CEUs. **Aim 3:** Met. Development of the [\*Hazard Ridge\*](#) interactive game template was completed with the expert assistance of SuperSoul, LLC. The Hazard Ridge game template was shared publicly at the June 2013 Annual Meeting of the International Society for Agricultural Safety and Health (Sandusky, OH) and the Oct 2013 National FFA Convention. **Aim 4:** Ongoing: Conduct a multi-state controlled evaluation utilizing the EOP1 measures with the addition of a revised behavioral intention measure that provides greater sensitivity to impact and behavioral change regarding safe farm practices.



John Meister and Richie Hoagland of SuperSoul LLC demonstrate the Hazard Ridge digital game-based learning program at the June 2013 Meeting of the International Society for Agricultural Safety and Health (ISASH)



Rural high school students interact with the Hazard Ridge farm safety instructional game during the 2013 National FFA Convention; Louisville, KY.

**Aim 5.** Collaborate with other NIOSH-funded Agricultural Centers toward development of a uniform and scientifically rigorous evaluation framework across the Agriculture, Forestry, and Fishing Initiative.

- Toward this end, we have participated in multiple conference calls with our counterparts at other funded Centers, and sought to improve “alignment” between the way in which NIOSH collects and documents extramural project information (NPPM database, etc.) and the way in which PIs/Centers report. This aim was a major topic during the CSU-HICAHS Evaluation Workshop; incl. Drs. John Howard, Dr. Paul Gunderson, et al. 2013 April 15-17.

Presentation: Stone RS, Donovan T. Southeast Center Evaluation at a Glance. Fort Collins: Colorado State University, High Plains Intermountain Center for Agricultural Health and Safety; 2013 April 15.

## **Relevance**

The evaluation core is tracking and documenting the Center's continued responsiveness to top priorities of the NIOSH Agriculture, Forestry, and Fishing (AFF) initiative and the National Occupational Research Agenda (NORAI). In so doing, it is guiding our research, prevention, and education cores toward a more synergistic focus on both productivity (outputs) and outcomes as identified in the NIOSH logic model for program evaluation (Felknor, O'Hara, Robison 2012).

## **Plans**

Dr. Richard Ingram agreed to replace Dr. Ramona Stone as PD/PI for Evaluation at the conclusion of the 09/30/13 budget cycle, with a gradual transition in duties.

A meeting of the Evaluation team including Dr. Ingram was held on February 5, 2014. Dr. Ingram is a Research Assistant Professor in the Department of Health Management and Policy, UK College of Public Health. He completed his DrPH at the University of Kentucky and holds an MEd from the University of Virginia. (BA, University of Cincinnati).

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National Research Council and Institute of Medicine. Committee to Review the NIOSH Agriculture, Forestry, and Fishing Research Program. Agriculture, Forestry, and Fishing Research at NIOSH. Report No. 3, Reviews of Research Programs of the National Institute for Occupational Safety and Health. Washington, DC: National Academies Press, 2008; 354 pp. ISBN-10: 0-309-11579-5. See, esp., **Chapter 2: The Ideal Agriculture, Forestry, and Fishing Research Program**. Accessed online at [http://www.nap.edu/catalog.php?record\\_id=12088#toc](http://www.nap.edu/catalog.php?record_id=12088#toc). The NIOSH AgFF review was begun in 2007 by the Board on Agriculture and Natural Resources of the National Research Council and Institute of Medicine and chaired in both 2007 and 2012 by Dr. Paul Gunderson. This document will henceforth be referred to in the text as NAS, 2008.

NIOSH. National Occupational Research Agenda (NORA) Agricultural, Forestry, and Fishing Sector Council. National Agricultural, Forestry, and Fishing **Agenda for Occupational Safety and Health Research and Practice in the Agricultural, Forestry, and Fishing Sector**. 2008 Dec. 93 pp. Accessed online at <http://www.cdc.gov/niosh/nora/comment/agendas/AgForFish/pdfs/AgForFishDec2008.pdf>.

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